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ANCIENT EGYPT AND THE EAST

1933.

MARCH, JUNE.

PARTS I, II.



CONTENTS:

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SEPTEMBER, DECEMBER.

PARTS III, IV.

CONTENTS.



1. EGYPTIAN SHIPPING—*continued.*
FLINDERS PETRIE.

2. THE BISMAR IN ANCIENT INDIA.
COLONEL N. T. BELAIEW.

3. PATHOLOGY AND ART AT EL AMARNA.
DR. E. M. GUEST.

4. AN IVORY IN THE PETRIE COLLECTION.
E. S. THOMAS.

5. THE MAT WEAVER FROM THE TOMB OF
KHETY.
MRS. G. M. CROWFOOT.

6. ANCIENT EGYPTIAN SHIP DESIGN.
C. D. JARETT BELL.

7. PRIMITIVE ASTRONOMY.
FLINDERS PETRIE.

8. NOTE ON DEFORMED SKULLS.
DR. E. M. GUEST.

9. REVIEWS.
10. JOURNALS. } (SEE INSIDE COVER.)

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ANCIENT EGYPT AND THE EAST

EGYPTIAN SHIPPING.

OUTLINES AND NOTES.

THE CONDITIONS.

EGYPT is above all things a country for boats. As it consists essentially of the Nile and its banks it has an unrivalled waterway; this is so sufficient, so monopolising, that down to fifty years ago there were no continuous roads, only the Nile, and tracks from it across the fields up to the desert. Not only was this a matter of facilities of water traffic, but also of sheer necessities, as the land was flooded for a quarter of the year from rock to rock on either hand, the villages stood up amid the flood as islands, and the only communication about the country must be by water. All these conditions made the sailor and ferryman therefore the most prominent types of the country.

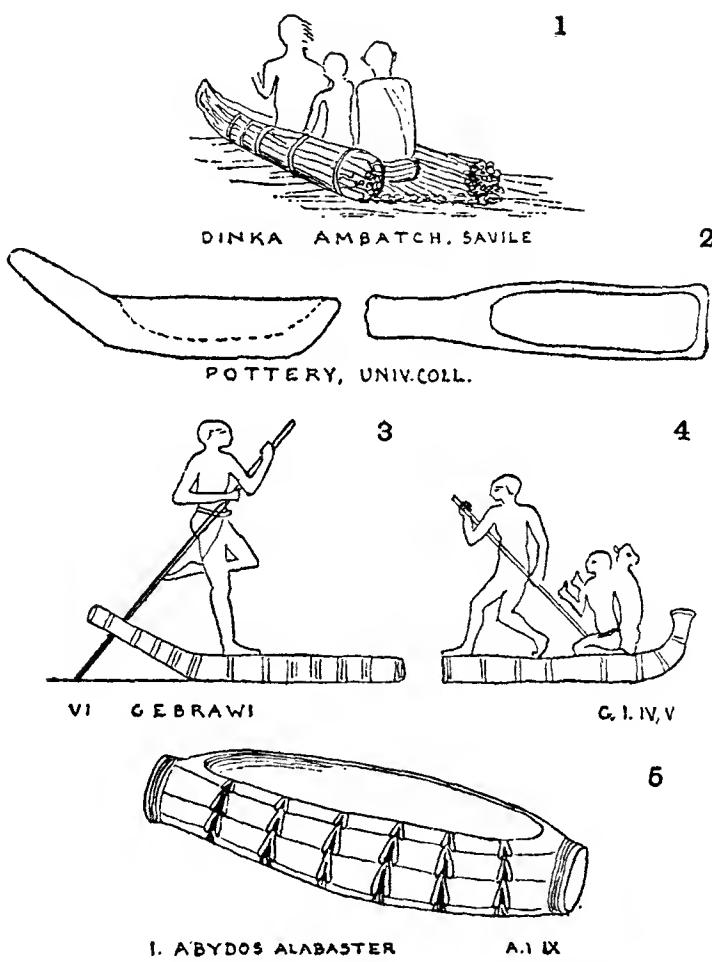
This habitual life has led to more familiarity with water than is seen in any other country of the Mediterranean. The Egyptian thinks it natural to bind together some dried reeds, and extemporise a raft enough for a couple of people. In a climate where the river is usually warm and clothing is slight, the need of a watertight boat does not exist for persons, and only perishable goods require more consideration.

It is probable therefore that floats and rafts have been used by the varied peoples of Egypt long before they left any trace of a continuous civilisation. The vulture that sails down through the air to float on a carcass in the river would be an incitement to river transport which any savage would understand. The beginnings that we recognise only show us what was learnt after ages of experiment on getting over the water. The earliest ritual of the deceased king represents him as hailing the ferryman, like Charon, to take him over the water of death to the blessed land; but, if there be no ferry, then there is a couple of reed floats of the sky, or heavenly ocean, to bear the king safely to his desired haven. When we come to collecting the earliest figures of boats of the Nile, we are then only stepping into the midst of a mixture due to many experiments and ages of change. There is nothing really primitive about it, but only fossils

of many primitive types. We must not expect to find that the successive changes of transformation grow age by age in order; for that all happened long before anything that we know; they were going on all together, according to the needs and means of every class. The poorest beggar riding on his reed float, and the great man in his dahabiye, went on side by side. We must not be astonished at finding such a mixture anciently, any more than reed floats being jostled by steamers now.

MATERIALS.

The use of inflated skins, or gourds, or basket-work coracles, does not appear in Egypt, though they were—and are—so usual in Babylonia. Papyrus



abounded in the unreclaimed Nile swamps, even during the pyramid period, and that provided the standard boat-building material. A spongy stem which held much air, and yet could be crushed and bent without breaking across, was an ideal material. The continuance of its use is seen by the export of papyrus prepared for writing, which continued into Byzantine and Early Arab times. It was exported to Europe in the VIIIth century, and was in common use for Egyptian receipts in the Xth century. Its disappearance from Egypt, while it still grows to the north in Sicily, and to the south in the Sudan, seems

due to closer cultivation on the Nile in the last thousand years. The large size of papyrus boats is astonishing ; some over thirty feet long are figured. Yet these were distinctively of papyrus, and it so continued in use till late times. Isaiah writes as a matter of course of envoys from Egypt coming to Palestine " by the sea, even in vessels of bulrushes upon the waters ", which shows that as late as the VIIIth century B.C. the sea passage of about 100 miles from Pelusium to Gaza was performed by officials in papyrus ships.

Concurrently with papyrus, timber began to come into use, and it is difficult to say where the timber began to determine the form and size. Long timbers or poles appear as cargo on the ship with two cabins, painted on the earliest class of figured pottery (fig. 48), the white line on red, at the beginning of the Amratian age. Tripod masts, or a plain mast supported by a straddle mast, appear in a model of an early papyrus boat (fig. 45), before the Semain ean age, now at University College. Certainly by the time of Seneferu wood had to float off the stocks, without support at the ends out of the water. To meet this risk the ends were tightly lashed together by a long brace of ropes, raised on struts so as to pull the ends upward (fig. 60). By twisting these ropes the tension was increased until it just took up the weight of the two ends, free of the stocks. Thus there was no danger of the boat breaking its back when it came to floating. When free in the water the tension could be gradually liberated, making sure that there was no further strengthening necessary at any part. No such brace is represented on any boat that is finished and in action ; but it was retained on the large cargo vessels, especially for sea voyages, to resist the inequality of support due to waves. Nonsense has been written about this brace being intended to pull the boat into a concave form ; any such distortion of the built boat would ruin it ; the only function of the brace in boats was to preserve the built form without change when subject to different stresses on launching, or when on large waves.

9 one-word

CONSTRUCTION.

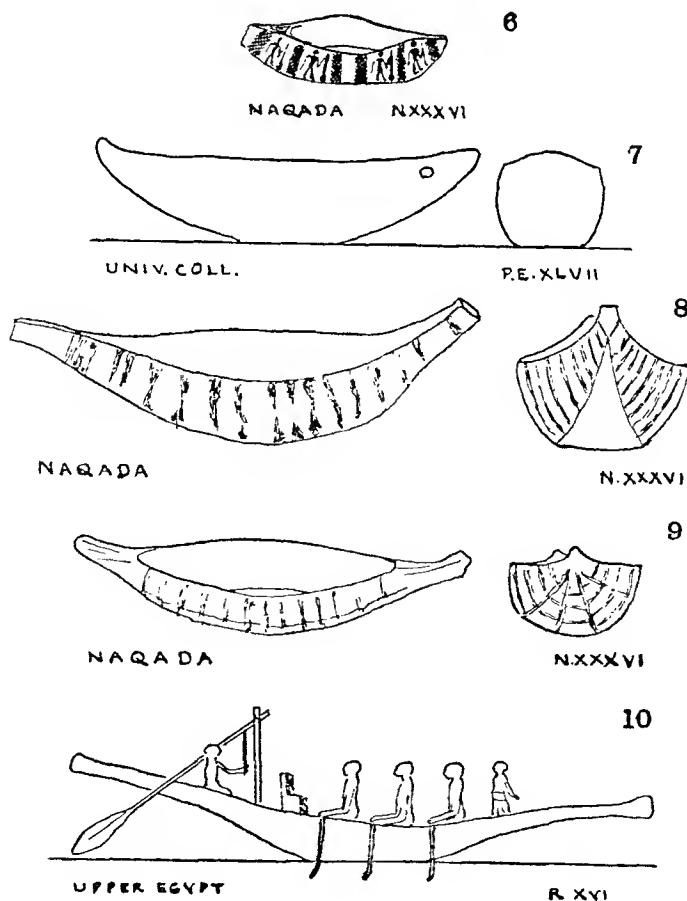
The method of construction was entirely different from that of modern times. There was no clinker-built work with strakes overlapping down the sides ; it was all carvel built with strakes laid edge to edge, flush on the faces. A middle beam ran along the axis, but it did not project as a keel. There were no ribs, but the whole structure was held together piecemeal by dowels and ties. Thus the whole principle of building descended from the lashed bundles of reeds for a papyrus boat, whipped together by cords, as in fig. 4, from which the idea of little dovetails all over the surface was derived. In the large boat over 33 feet long and 7 feet wide, found at Dahshur, the axis beam was in three pieces, joined together at the ends by dovetail tenons let in. On each side of this beam irregular strakes were added, cut as the wood allowed ; attached to the beam, and to each other, by square dowels in the edges, and dovetail tenons on the inner face of the boat. The same system continued up to the top rail. Copper bands were added on the top surfaces liable to wear. The thwarts were all let through the top strakes below the rail, and pinned in by a dowel passing through the thwart into the board. The deck planks were pinned to the thwarts by small dowels. The boatbuilding description by Herodotus refers to the native acacia, which was too hard for much mortising, and was attached solely by large square dowels in the edges of each piece. The result of all this building was to produce a spheroidal sheet of timber, attached all over by the edges, and floating like a saucer.

TYPES OF BOATS.

The simplest float is still in use in Egypt to-day, for which the stems of maize (durra) are used, the papyrus being extinct there. Bundles of stems are lashed up, and three such bundles are laid side by side, lashed together, and kept flat by some sticks fixed across. The passenger sits on this raft, about 13 feet long and $2\frac{1}{2}$ wide, and paddles himself across the river. This is described as the *ramūs* by Somers Clarke (see *Ancient Egypt*, 1920, pp. 43, 51).

A more structural raft is the *ambatch* on the Upper Nile. Here a floating platform is fenced on each side with a bundle, to keep waves from washing across (fig. 1). Another form of this is a flat platform running off to a raised point at the end (Schweinfurth, *Au cœur de l'Afrique*, p. 66). The raft with a projecting end begins in the Badarian age, say 7000 B.C. (Brunton and Caton-Thompson, *Badarian Civilisation*, xxiii, 33), and this is more developed in the pottery model (fig. 2), where the narrow raised end would serve as a landing plank across the Nile mud banks. This explains the type in the VIth dynasty (figs. 3, 4) where it is pushed along by poling, and serves to carry a boy with a young calf on his back. The amount of raft below the waterline is not seen.

The simplest closed raft with sides to fend off the waves is copied in the alabaster model (fig. 5). This shows well the detail of the basket-work method, of binding up each bundle catching through the next bundle. Though this object may have been used as an ornamental tray, it is clearly copied from an actual structure.



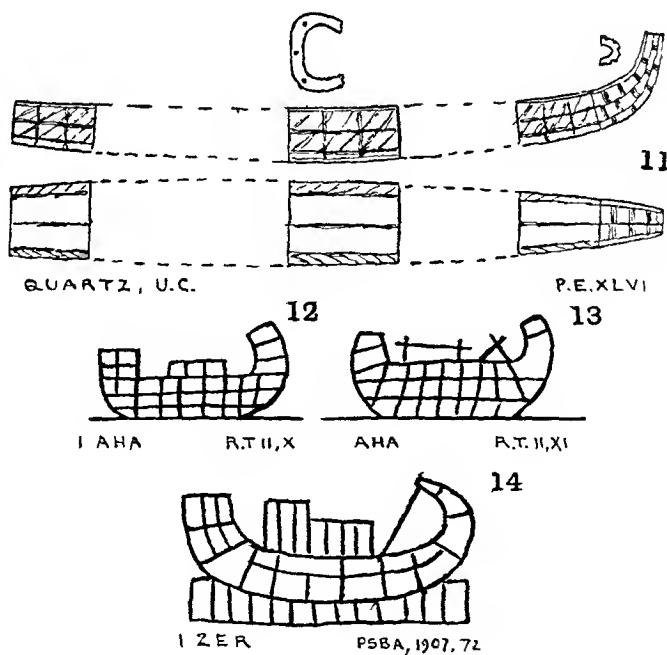
The next step in development was to narrow the ends into a cut-water, in order to improve the mobility of the craft. In fig. 6 the figures of men holding oars, painted on the sides, were doubtless to confer spiritual rowers on the boat for the spirit of the deceased in the tomb. This is then distinctly a rowing boat for several men.

Another model of much the same shape (fig. 7) is of plain pottery. The wide flat bottom of the models 7, 8, 16, 17, is probably copied from actual craft, retaining the flat-raft type as a base, for that was the most suitable for giving flotation in shallow marshes.

The vertical markings on 8 and 9 are regarded by Reisner (xvii, xviii) as belonging to wooden boats because of the thin sides, the marking therefore indicating ribs or binding. In fig. 5, however, we see a side unquestionably of papyrus bundles, built up one on the other. So long as flotation was due to a raft bottom, and the sides were only fenders and had no hydraulic pressure, they might be almost like matting on edge. The painted lines in figs. 8, 9 would then show the lines of binding which held the pad of bundles in order.

Now we can see the functional use of the raised ends of the boat. So long as the lines of the side were horizontal, the mat wall would sink down; but when the ends are raised the flexible wall of side hangs from them in an easy curve, high enough in the middle. Though the droop of the top of the side in fig. 9 is but little, the long line of tie half way down reaching up to the beak would sustain the side.

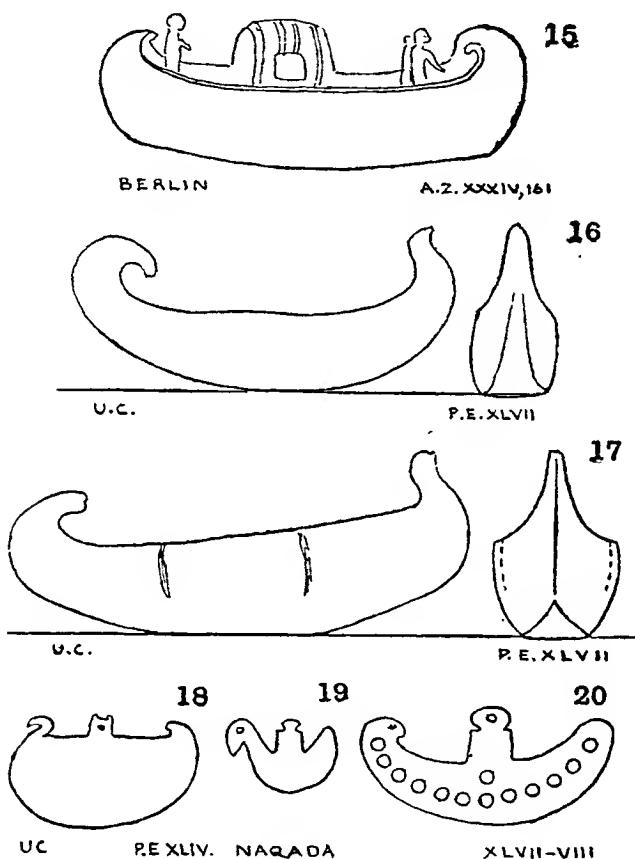
In fig. 10 is another type of a narrow boat, a sort of racing boat, evidently built for speed, required by a master and his crew. The long ends would (like that of fig. 2) serve as a landing plank.



The construction of a very narrow boat (at least 10 to 1) with raised end is well shown in the quartz model, fig. 11. This was made of separate pieces of milky quartz, carved, covered with green glaze, and connected by wire through holes in the edge. The joints were covered with sheet gold, adhering to the fused glaze.

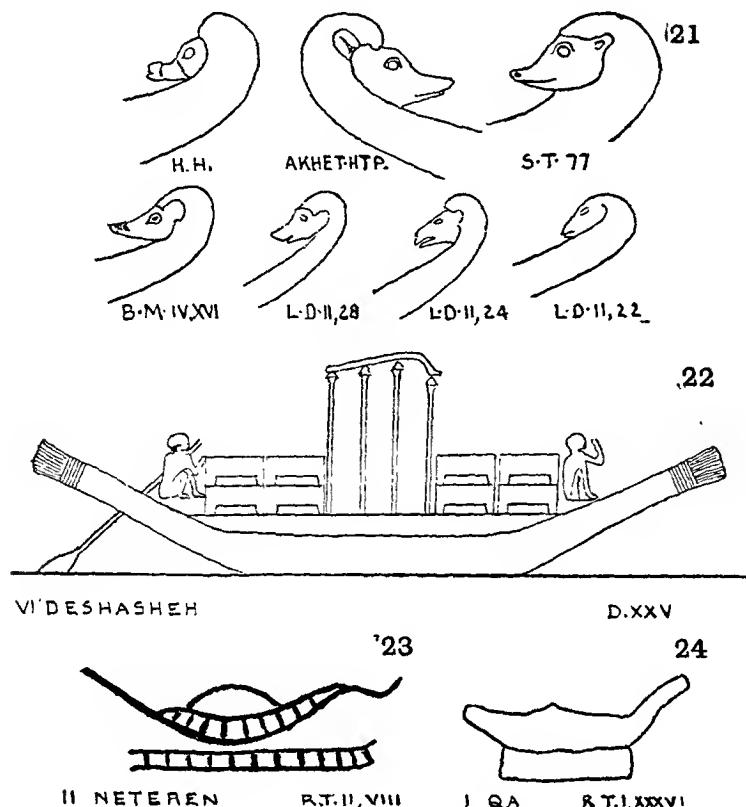
The detail of the section is instructive ; the sides were fairly thick bundles of papyrus, lashed diagonally around ; near the end each bundle was tightly bound around at close intervals to stiffen its position ; when placed together the hollow interior of the boat was continued up to the tip. There was no general tying round all in one bundle at the end, as in 5. The structure was essentially a long float on the water, with raised ends to stiffen the sides.

In the forms 12 to 14 we have the usual freight boat of the 1st dynasty. The lines upon them are not necessarily structural, as such appear on water and on buildings ; they express the surface of a solid. But in 14 the detail is observed of the lines curving up to the ends, agreeing with the structural detail of the side being maintained by suspension from the ends. The height of the ends would be useless otherwise, or merely a waste of weight and material.



The models 16, 17 show how thin the sides were relatively ; also the flat bottom derived from the papyrus float. The curvature, again, would keep the sides taut, as by catenary suspension. This curvature would be only practicable with papyrus construction, such as we see in 45. The smooth flowing curves of the form are unlike any woodwork where thin boards are not to be had. How difficult it was to saw thin wood is painfully seen in the coffin boards of early times ; the direction of the saw goes all round the planes of the cut (see *Zurkhan* I, xxiv), for the saw was only a large copper knife notched on the edge (*Tombs of the Courtiers* V, 20, 22). With such tools and results it is useless to imagine thin sawn planks like ours to have been available for boat-building.

From the curved and raised ends of such forms there seems to have been copied a type of slate palette (18), which transforms the bird-like end of 16 and the curve-over of the tail. This was then copied as a magic or amuletic form of a bird in 19, and the idea was lost when copied as in 20.

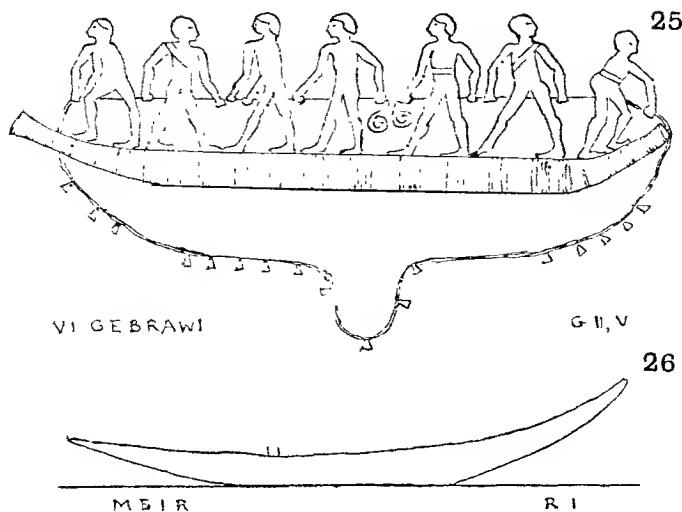


In connection with the head ornament of a boat in the pre-dynastic times, there may have originated, by the IVth dynasty, the head often carved at the end (21). This is looking inward to the load, as the mummy on the funeral boat. The earliest example, at Hemamieh, of the IVth dynasty, is unmistakably a pig's head, but later it was modified more like a sheep. The connection of the pig with Set (both of them abhorred by the Horus tribe) links this fashion with Set, who was guardian of the ladder for the ascent of the dead to the sky. This is an entirely different eschatology to the Ra worshipper's belief in joining the boat of the sun.

The loaded freight boat (22) is shown with a long base on the water. By the size of the catafalque which held the coffin, the vases of offerings piled fore and aft, and the two boatmen, the whole would be about 30 feet long. It has a raised deck or platform to preserve the load from wet, and that suggests that the whole boat was of papyrus, a float and not a watertight vessel.

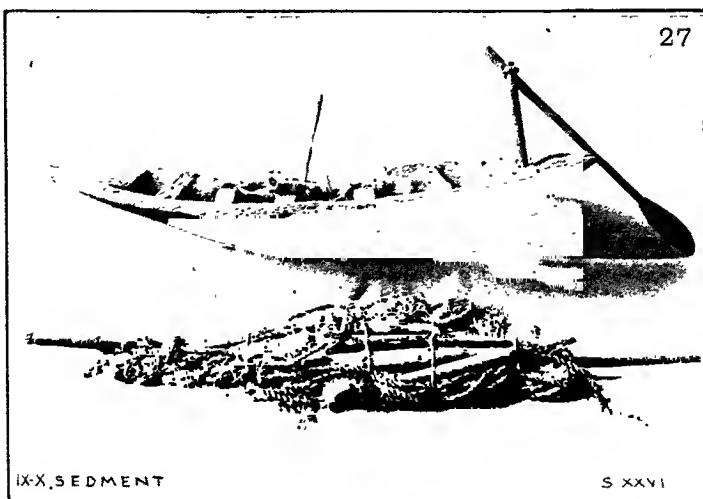
The splay form for loads is seen also in 23, 24, of the 1st and IIInd dynasties. The raised ends again suggest that the sides hung from them.

Turning now to the fishing boats, a very long, narrow form (25) was required for taking in the long seine net without jumbling the fish. The outline of the net with floats along the edge is figured full of fish. Pulling up the ends to the



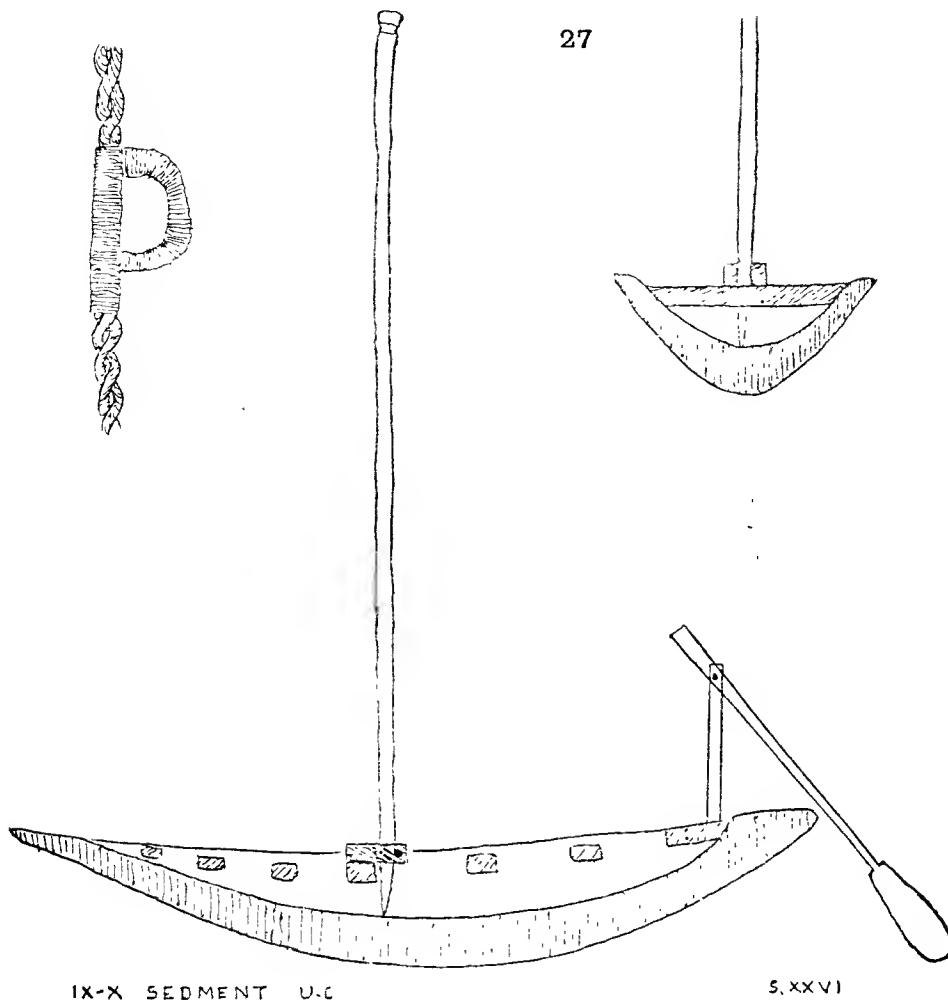
two ends of the boat would be the first step toward lifting the net and fish into the boat all along.

The low boat (26) is probably for taking in a fishing net, also the model 27,



for with it was the bundle of mast, yard, cordage, and fishing net. The sections of 27 are opposite. Whether the actual boat was of wood may be questioned; in favour of it is the ridge below instead of the flat papyrus float. The thwarts are not let in, but only pegged on at their ends. The form is closely like that of the large wooden boat found at Dahshur. The mast pole is trimmed below, so that it will jam tight in the square grip when the end touches the bottom of the boat, thus there is good reason for that being its position. The large quantity of twisted fibre rope is too much broken to be restored. One piece is carefully payed with thread to form a hand grip. Two other pieces are attached by thread for several inches.

Passing now to the ceremonial boats, the characteristic form for the funeral boat is 32, with a strange bend in the raised end of the stern. This type was that of the great ship of Snefru (30) which was 160 feet long; and also of the

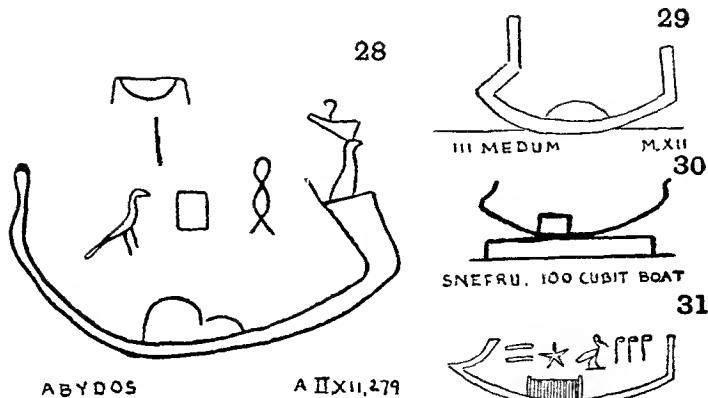


divine boat (31). It also appears with the title *oz mer* (conservator of canals) in the tomb of Rahetep (29). This type appears in an earlier form in the 1st dynasty (28) on a bowl of crystalline quartz, which came from the "gold" chamber of the royal burial, and belonged to the *hepu* funeral boat there. On the prow is the royal falcon crowned; the stern has much less inflection than in the IVth dynasty.

There is always the load on these boats; on 31 it is free of coverings and appears as a chest or box coffin. On 32 the catafalque is over the mummy which is omitted here as hidden by the mourners. Much later there is the Osiris boat at Abydos (33), the structure of which is copied here. The flower endings of the terminals are changed still more on 34, the funeral model boat of a priest of Amen.

Another ceremonial boat was that of Har-akhuti. The most explanatory form is that on the Annals in the IIInd dynasty (35). There the falcon of the rising, and that of the setting sun have each a stand, separated by the *neter* sign. The prow has a long hanging over it, the stern forks in two. Both of these features continued, and are best shown at Abydos (38). There the stern is doubled, and the hanging over the prow is divided in two.

The earliest example is under Aha (36), where the stern is divided. A variant



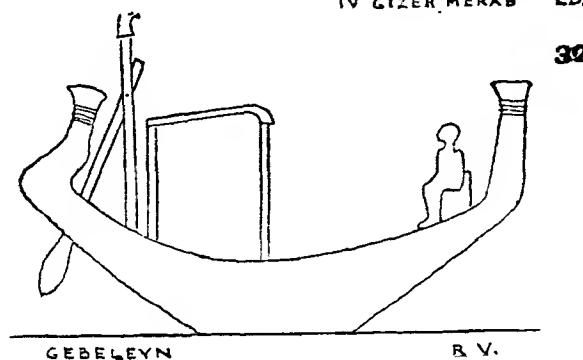
ABYDOS

A II XII, 279

SNEFRU, 100 CUBIT BOAT

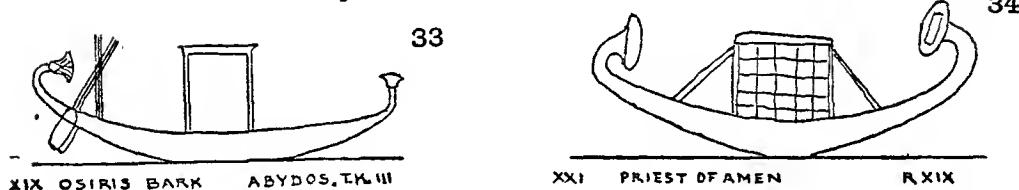
31

IV GIZEH, MERAB LD. II, 16



GEBELEYN

B. V.



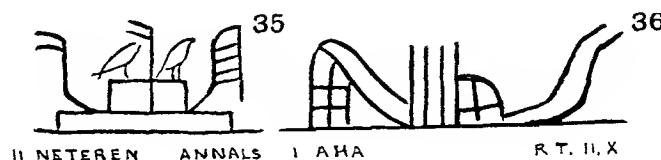
XIX OSIRIS BARK

ABYDOS, TH. III

XXI PRIEST OF AMEN

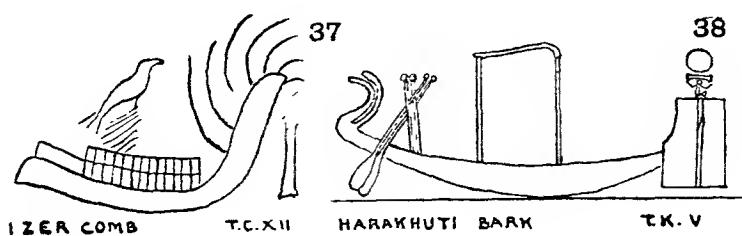
34

of this boat is on the comb of Zer (37), where there is a complex lading and no raised stem. Another variant is 39, the bark of Sokar, where the falcon is mummified, and is rowed by falcons at the oars, perhaps the sign of the deified king as serving him. Another form of Horus bark is 40, of Hor-khenti-kep, Horus in the *harim*; the paw form of *kep* is early, as in Hemamieh XXI. A strange form is 41, on the palette of Narmer. The upright prow is that of the ships of the dynastic race (55, 56); the border along the whole vessel, and the objects in the boat still need explanation.



II NETEREN ANNALS I AHA

R. T. II, X



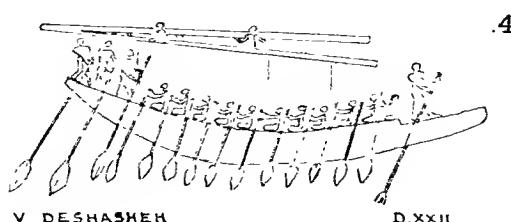
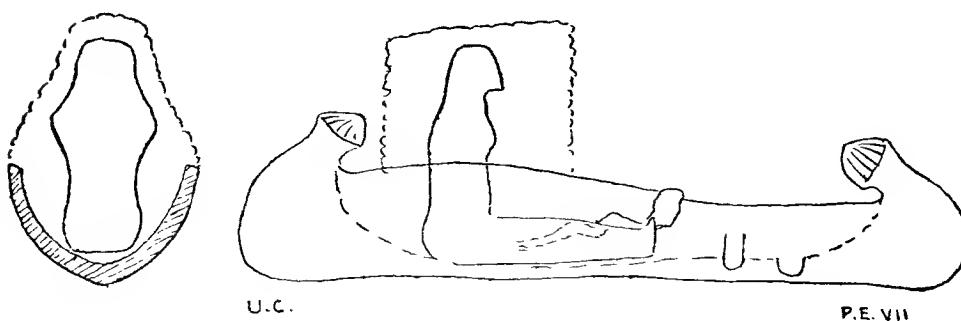
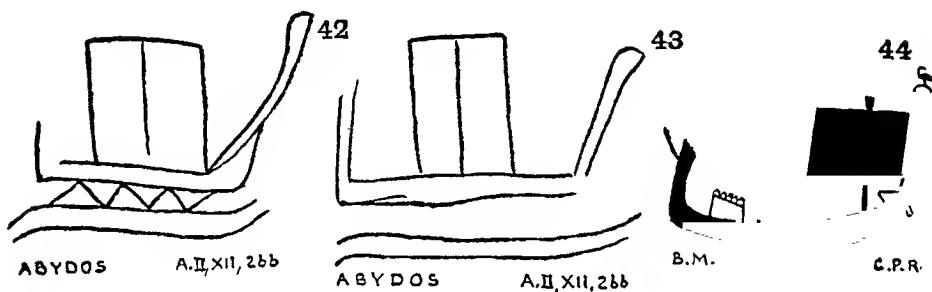
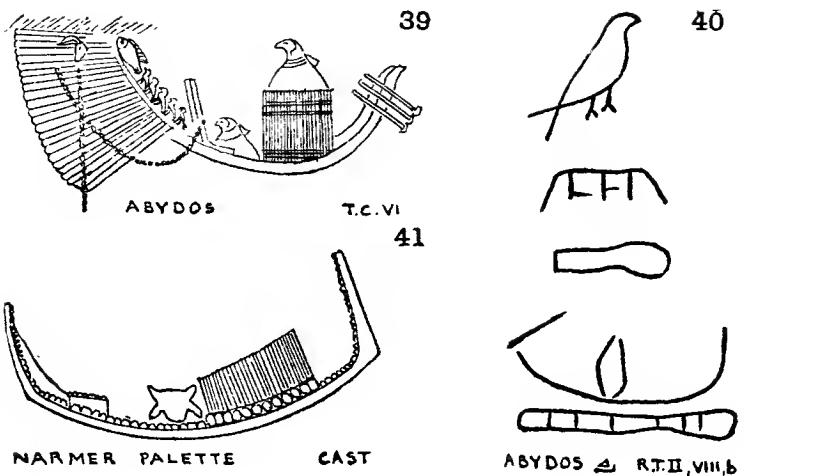
1 ZER COMB

T.C. XII

HARAKHUTI BARK

38

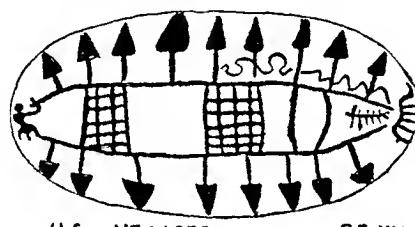
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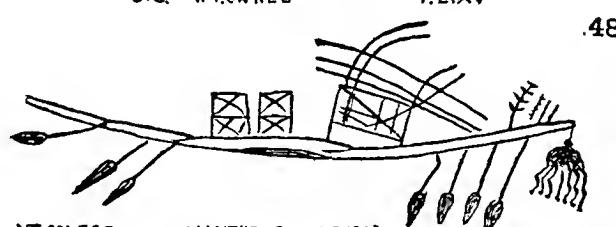
SAILS.

The same upright ends of the boat in 42, 43, 44 again belong to the dynastic race (see 55, 56). Whether the objects on 42, 43 are a shrine or load, or a square sail and mast, is uncertain. But there is no doubt that 44 has a square sail. That masts and sails were used in predynastic times is proved by the pottery boat (45); this has a very crude figure of the deceased seated, and before it a large pole for a mast, and a lesser pole on each side for a straddle mast to hold up the main mast. The straddle type of mast was essential in a papyrus boat, in order to put the weight on the depth of the sides. In the boat are serpents, one on each side of the figure. The ends of the papyrus are bound around to form a sort of rosette knob at bow and stern. Over the figure is an awning of fibre, which appears in the photograph 88 (see next article).

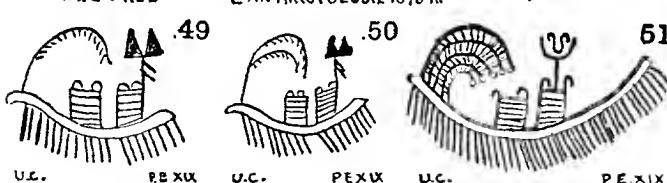
The straddle mast could be taken down when descending the Nile, and placed on posts, as in 46. Where it was very heavy, as in the ocean-going ship of Sahura (78, see next article), it was lowered and rested on the steering posts. There are other examples of the straddle mast in 64, 65 (in next article), but it seems to have been disused in Egypt after the Old Kingdom. In Syria, it was retained together with the single mast until the XVIIIth dynasty so it seems likely that the type on the papyrus boats originated in Syria.



47



48



49

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51

U.C.

P.E.XX

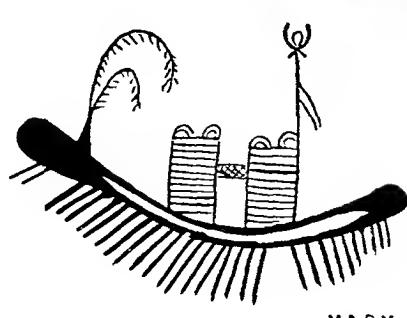
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P.E.XIX



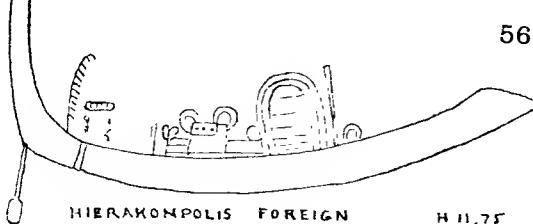
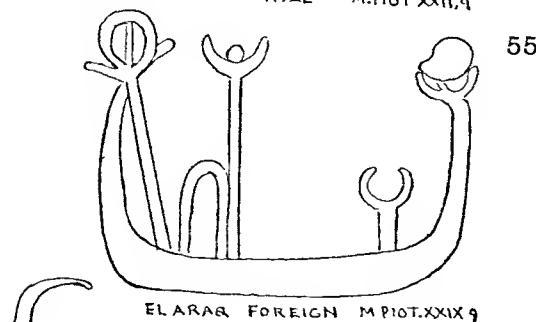
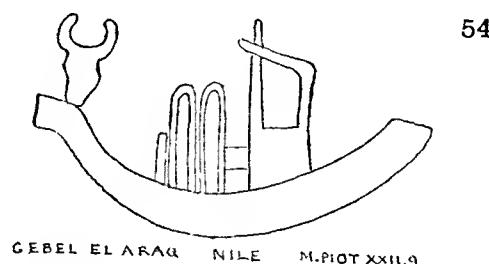
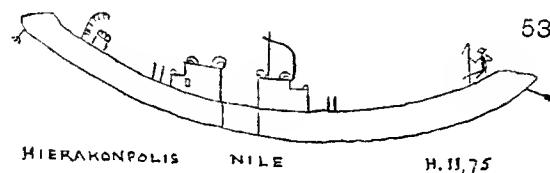
52

M.A.P.X

Besides all the forms that we have reviewed, there was a type of double cabin boat, from early times until the dynastic age when it ceases. They are found in the oldest paintings known, of the beginning of the Amratian Age, painted in white lines on red pottery. The oldest example of a plan that is known is the painting in the hollow of an oval bowl (47). The outline of the boat has on it two squares covered with cross lines, in the usual position of cabins. In the bows is the branch as usual; outside hangs the bundle of rope, like that hanging below the prow of 48, for a fender in case of collision. At the stern is the steersman seated, as on 53. Around the vessel are triangular oars projecting, and along the larboard side there is a ripple of water below the oars. Nothing is forgotten.

Another painting of the same age, in white lines on red pottery (48), has the two cabins, and also a sort of crate of lumber forward, with poles stacked up. The prow branch and fender are both clear, but there is no steersman, and only seven oars in all.

Much later than these are the abundant paintings of ships on vases of the Gerzean period (figs. 49 to 52). These are almost all of the same type. Rarely a bridge joins the two cabins (52). The main variation is in the branch; this



is single (49) on early boats, then doubled (50), and on coarse, debased, drawings it is made into a grove (51). These ships have usually a gap between the fore and the aft oars, which properly coincides with the space between the cabins, the clear way left for entering the boat. At the back of the cabins is the ensign of the port to which the ships belonged.

The same patterns of ship appear on the wall paintings of Hierakonpolis (53). There at the bows is the fender hanging, the branch and the seat for the look-out. The two cabins are amplified, and one has a window, the other a shelter on the roof. The steersman is seated at the stern. On the ivory carving of the conquest by the dynastic people there is much the same ship for the Egyptian (54). The top shelter is there, but the fore-cabin is changed, like the invader's cabin, and there is a bull's head as amulet on the prow, but no branch.

The ships of the dynastic invaders (55, 56) are quite different from the above. Both have the high prow, and 55 has a high stern post also. What the objects may be on the prow and stern we cannot interpret. There is a round-topped cabin, and this may probably account for the engraver, who was an invader, placing a round-topped cabin on the native ship. The drawing 56, done by a native of an invader boat has the round-topped cabin, but also the square native cabin and the branch and look-out. Probably both parties have put in details which really belonged solely to their own side ; but the broad distinction of the two types is very marked, both on the native version at Hierakonpolis, and on the invader's ivory carving.

FLINDERS PETRIE.

(*To be continued.*)

NOTES ON SOME INDIAN AND EAST IRANIAN POTTERY.

THE discovery of the Indus civilization may eventually rank as the most dramatic and revolutionary contribution to the history of human culture made in the current century. In the IIIrd millennium B.C. the Indus valley was the seat of a complete urban civilization, fully the peer of those of Sumer or of Egypt in the Pyramid Age. The newly discovered centre of city life was already in contact with Mesopotamia, and thus directly contributing to the formation of the cultural tradition which we inherit. Moreover, its civilization was based upon the same fundamental discoveries as the Sumerian and Egyptian, but these were elaborated in a thoroughly individual and, indeed, already Indian way. In the following notes on certain aspects of early Indian ceramics I hope to illustrate the last two points—to emphasize the thoroughly individual and specialized character of the newly discovered civilization and to define the problems raised by its underlying kinship with the more familiar cultures of the Near East. But at the outset I should like to thank the Director-General of Archaeology in India and his Department, through whose courtesy alone I have been enabled to handle and study the material here described.

To prove in the first place the underlying unity in ceramic technique between India and Mesopotamia it suffices to refer to an illuminating study by Dr. Mackay. He has pointed out¹ that several technical processes employed to-day by the village potters of Sindh and the Punjab can be traced already among the prehistoric potters of Mohenjo-daro,² that the special type of wheel and other peculiarities of the modern craft are common to Sindh and the Punjab on the one hand and Mesopotamia on the other, and³ that certain distinctive craft-tools, notably a very peculiar form of stopper now termed a *dhakni*, used alike by the modern and prehistoric Indian potter, was also current at Jemdet Nasr in Mesopotamia in the IVth millennium B.C. There is, accordingly, a community in the tradition of the potter's craft between Mesopotamia and Sindh-Punjab; very probably this community goes back into prehistoric times. This probability is enhanced by my observation that the peculiar grey ware from the Indus sites is identical technically with that current in Mesopotamia during the Uruk period.

By the middle of the IIIrd millennium, however, this common tradition had been given a very specialized and individual expression in the Indus valley. A brief consideration of the peculiarities of the finer Indus fabrics will suffice to demonstrate this. The most distinctive is a hard-fired pinkish ware, covered with a red slip or wash. The grey ware already mentioned is the technical counterpart of the pink, owing its colour principally to the reduction of the iron oxides in the clay from the ferric to the ferrous state, as established by Khan Bahadur Sana Ullah's analysis. It, too, may be covered with a dark grey slip or wash corresponding exactly to the red slip on the commoner pink ware. I may remark that the pottery bangles show precisely the same variations between red and dark grey.

The highly specialized character of the Indus pottery is most conclusively demonstrated by the decoration of the commonest red fabric. This attests a definite artistic style, self-conscious and sophisticated to a degree unparalleled in early ceramics before the Middle Minoan period in Crete.



FIG. 1. LARGE JAR FROM AMRI. (1₅)

The essentials of this classic style have been already outlined by Mackay in his masterly report,⁴ but may none the less be recapitulated here in a few words. The designs are commonly executed over the aforementioned red slip in a black paint applied with a stiff "brush." They either cover the whole surface of a vase continuously, as in fig. 1 from Amri, or at least fill broad zones and panels. The designs consist either of stylized vegetation—trees, shrubs, creepers, but rarely flowers—or of repetition motives; by the latter term I understand motives that can be repeated indefinitely in any direction. Exceptionally, zoomorphic elements are introduced, generally peacocks or other birds peeping out among the foliage of the vegetation designs. In a random sample of 300 sherds from Mohenjo-daro, I found that approximately 35 per cent. of the designs were based upon vegetation, while 65 per cent. were made up of repetition motives.

The most perfect of such is the intersecting circle, and actually over 62 per cent. of the sherds examined were decorated either with intersecting circles or with scale patterns. The circles have often been very irregularly drawn, as the exact copies in fig. 2 indicate; the brush, indeed, seldom traces a complete circumference, but more often loops and arcs. Yet there are sherds on which the circles have been lightly scratched in advance with the aid of some sort of compass to form a guide to the painter, so that the intention of the artist is indisputable. By embellishment in the manner illustrated in the figures, the

intersecting circles yield rosettes, stars, and other figures, and, by combination with chequers, what Mackay calls the "stretched hide" pattern.

Chequers and triangles also yield repetition patterns, but were comparatively seldom thus employed by the Indus potter; only 7 out of the 300 sherds from Mohenjo-daro were thus decorated. When thus employed they are always completely alternated, so that, for instance, a blank triangle has a hatched one on each of its three sides. More complicated patterns based on the cross, T-figures, wavy lines, and a heart-shaped motive were similarly employed; their use is further illustrated by shell inlays and gem engraving. Ribbon or zone patterns occur only as borders; most characteristic are what Mackay terms roundel and chequer borders, but zig-zag and wavy lines, hemispheres, triangles and the hatched guilloche also occur.

Such zone-patterns are rather more independent on a rare fabric, in which the ground is a pale buff or creamy slip. This fabric may perhaps be an import at Mohenjo-daro. It is sometimes decorated with bold intersecting circles, but more often with hatched triangles, semicircles, and lozenges. Yet a curious and highly specialized design, termed by Mackay the "comb motive," recurs on this ware and on normal red-slip ware (e.g., Hr, 478/6 and DK, 5922).

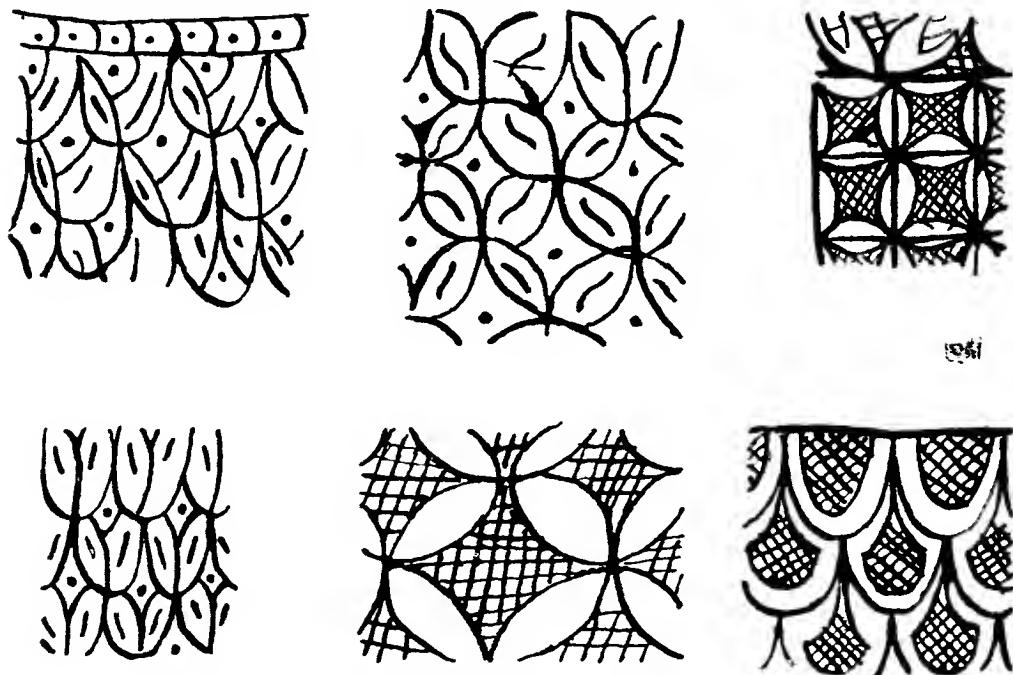


FIG. 2. DESIGNS ON INDUS POTTERY.

It is notorious that floral decoration and repetition patterns based on the intersecting circle are very rare in ancient decorative art. Both were, however, successfully employed by the Minoan artists of the IIInd millennium B.C., and the interesting circle system is traceable in Crete to Early Minoan times.⁵ Otherwise, a regular application of the system to the decoration of continuous surfaces seems foreign to the ceramic and glyptic art, apparently even to textile decoration, of the IIInd and earlier millennia. Intersecting circles and other repetition motives were indeed used in the Tel Halaf style of North Syria⁶ and Assyria, but not so as to cover any large continuous surfaces.

Indus pottery is accordingly the specialized product of a sophisticated civilization, long rooted in the soil. It attests, no less conclusively than the great cities from which it has been obtained, both the high cultural level of that civilization and its astonishing uniformity over a vast territory ; all the specialized techniques and motives found at Amri in Lower Sindh recur at Harappa on the Ravi, 500 miles further north. This cultural and artistic uniformity itself corresponds with the geographical and economic unity of the area watered by the Indus system, where the conditions of life are best satisfied by large organized communities.

For light on the apparent Mesopotamian relations it is natural to turn to the hill countries west of the Indus. There Sir Aurel Stein collected a great quantity of pottery, clearly allied to the foregoing, and even actual sherds of imported Indus ware. But the native pottery of the hills is stylistically barbarous, just as were the ruined towns and villages from which it has been gathered. It falls into a variety of local styles and fabrics in contrast with the uniformity noted in Sindh and the Punjab. Such diversity is only to be expected in view of the geographical nature of the country, which is broken up by steep ranges and precipitous narrow gorges into little basins of arid but cultivable alluvium that are economically independent. Such conditions plainly do not favour the growth of large economic units nor the rise of higher civilization ; historically, Baluchistan has never been more than "the barbarous dependency, broken up into parochial tribal units of some civilized State." But these very conditions, precisely because they are unfavourable to rapid progress, are calculated to preserve archaic traits which in a more progressive *milieu* would disappear. Hence, quite apart from its spatial position, the hill pottery is likely to betray, more clearly than that of the valley, any underlying continuity in tradition with Mesopotamia.

The most important regions and sites examined by Stein may be grouped as follows, going from north-east to south-west :—

A. Zhob valley.	1 Periano-ghundai.	<i>Mem. Arch. Surv. India</i> , 37, p. 34
	2 Moghul-ghundai.	" " " " " p. 48
B. Loralai.	3 Rana-ghundai.	" " " " " p. 52
(Tal. V.)	4 Sur-jangal.	" " " " " p. 73
"	5 Dabar-kot.	" " " " " p. 55
C. Pishin-Quetta.	6 Riasce-ghundai.	" " " " " p. 87
D. Rakshan.	7 Badrang-damb.	" " " " " 43, p. 35
	8 Kalatuk, Nāg.	" " " " " p. 37
E. Jhalawan.	9 Mehi.	" " " " " p. 154
F. Kolwa.	10 Kulli.	" " " " " p. 128
G. Makran, Kej. V.	11 Shahi-tump.	" " " " " p. 88
" Dasht V.	12 Suktāgēn-dor.	" " " " " p. 60
	13 Nāl.	" " " " " p. 166
	14 Nundara.	" " " " " p. 134

These sites will henceforth be denoted by numbers only.

In practically every basin we find a distinct ceramic style, and these variations are often accompanied by idiosyncracies in architecture and other traits. With one or two exceptions mentioned below, however, I do not think the varieties warrant the distinction of separate cultures any more than do the local styles of Thessalian A₃, β ware. Apart from the above exceptions, many common features—and particularly traits common to the hill sites and the

Indus cities—may be recognized. Apart from the ceramic evidence, I may recall cremation burials (1, 2, 5, 9, 12), figurines of humped bulls and of goddesses, numerous bangles of pottery (1, 2, 4, 5, 12) or bone (1, 4, 5, 10, 11, 12), button seals or stamps (5, 9, 12). Particularly important are a clay model of a cart (M. II, 3, 22 unrecognized), identical in type with those so common at Mohenjo-daro, and a stone vase divided into four compartments (III, 5), again exactly paralleled at Mohenjo-daro; both objects come from Mehi. (It should be noticed that in the more northerly sites (1, 2, 3, 5) the goddesses wear a hood; further south (9, 10, 12) the head-covering is absent, but the neck is decked with jewellery.)

All the pottery in question is wheel-made and generally pinkish buff in colour. A deoxidized grey variant, sometimes coated with a dark-grey slip, just as in the valley, is the reduced counterpart of the red ware, but rarely occurs (1, 5, 9, 10, and perhaps 4). At Mehi there are cases where a reddish slip has turned grey on the outside, while the interior remains red. (This deoxidized, wheel-made grey ware must be distinguished from the highly-fired hand-made fabric distinctive of the Shahi-tump burials.) In addition to technique certain distinctive forms are common to the highland and the valley, notably perforated vases (1, 5, 9, 10, 12), beakers with excessively small bases (1, 2, 9, 12) and dishes on high pedestals (1, 9). Imported sherds of painted Indus ware recur at three or more sites (5, 10, 11).

Technically, the native painted wares of the hills resemble those of the valley in the foregoing respects, but there are divergences in the colours used and the slips employed, which not only differentiate the hill wares from those of the valley, but also provide a basis for a geographical division into a north-eastern and a south-western group, corresponding roughly to the division between the figurines mentioned above.

In the first place, the hill-potter frequently employs a red paint (either more purple or more orange than the red slip) in addition to the usual black. In the south this red colour is used only in broad horizontal ribbons; in the north it is applied also in thin lines to outline or fill-in elements of the design. Little significance should be attached to this contrast. Monochrome and polychrome vases occur side by side at most sites. The red is used for embellishing

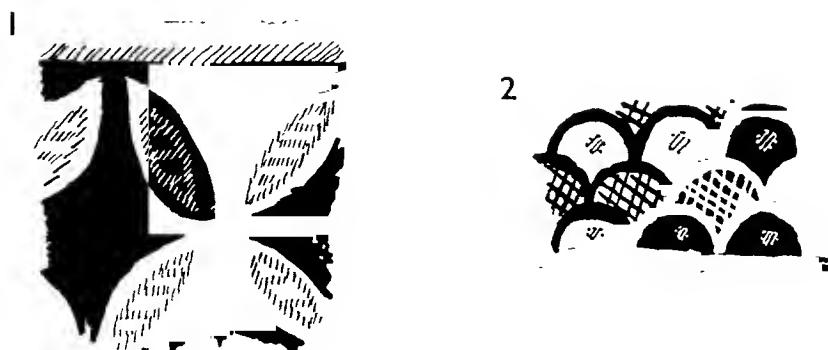


FIG. 3. DESIGNS ON BALUCHI POTTERY.

repetition patterns. Fig. 3 (1) shows an intersecting circle design from Moghul-ghundai on the Zhob embellished in red, and fig. 3 (2) a scale-pattern from Sur-jangalin Loratal also embellished in red. Conversely, there are isolated

sherds from Mohenjo-daro itself ornamented with red as well as black, quite in the Baluchi manner (e.g., C 1980, perhaps an import).

Apparently more fundamental is a distinction based on the slips employed. In the north, but also at Mehi and Suktagēn-dor in the south, a reddish slip or wash resembling, though inferior to, that of the Indus ware, predominates as a background for the decoration. Buff or cream slips are commoner in the south. Sir John Marshall is thus tempted to make a division into red wares allied to those of the Indus valley and buff ware "linking up with Mesopotamia

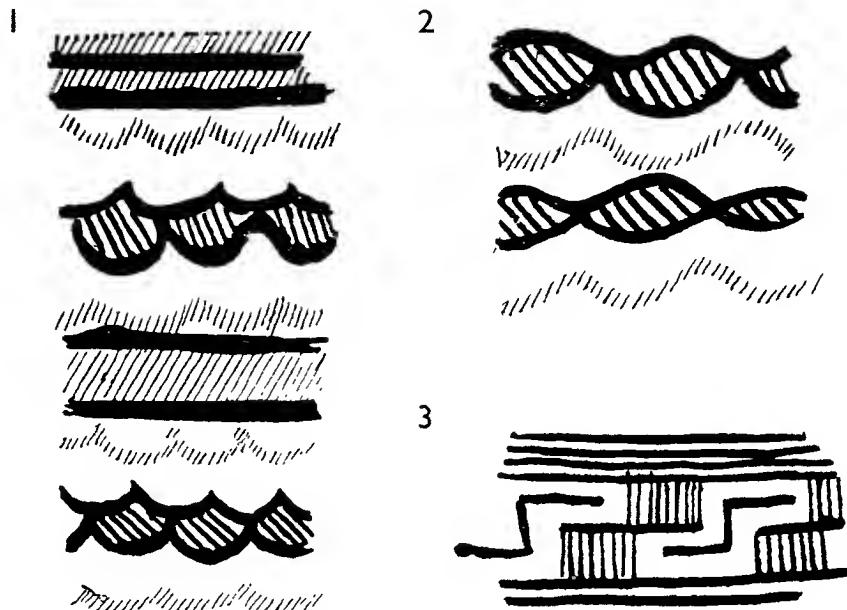


FIG. 4. DESIGNS ON BALUCHI POTTERY.

as opposed to the Indus." I think this is to exaggerate the distinction. There is no strict geographical or chronological separation between the two sorts of ware. The difference in background is not associated with any significant difference in design; on the contrary, identical designs occur over buff and red slips.

At Sur-jangal high up in the Tal valley the specialized pattern of fig. 4 (1) is executed on a buff slip on SJ. 16 and over a red wash on SJ. 7, the clay being pinkish in each case. Fig. 4 (2) shows a variant of the same design over a cream slip on pale buff clay. At Mehi in Jhalwan the peculiar motive of fig. 4 (3) occurs over a red wash on M. III, 1, 57, over a polished brown slip on M. III, 3, 8, and over a cream slip on M. III, 2, 5. At Kulli we have the same "border" in red and black over a buff slip on K.V. v, 3, over red in K.V. v, 20, and over cream on K.V. viii, 30. These instances could be multiplied. Sur-jangal even provides cases in which the pinkish clay is first covered with a cream (SJ. 3) or buff (SJ. 81) slip, which is then overlaid with a red wash to serve as a background for the design. The designs, that is, remain the same while the slips vary. The same will probably prove true of shapes when more vases have been reconstructed.

Finally, we have seen that vases coated with a pale buff or cream slip occur at Mohenjo-daro itself.

The use of pale slips need not then mean that the hill wares contain a western element lacking in India. Yet it may constitute an additional link with the west and denote an archaic survival of the tradition once common to India and Mesopotamia.

Turning now to the content of the decoration, the art of Baluchistan is barbaric. In none of the sites under discussion do we find a mature style such as ruled in the Indus valley. Repetition motives based on intersecting circles (2, 5, 10), scale-patterns (1, 3, 4), and alternating triangles (5, 6) were used, but never built up into superb decorative schemes. The design is usually restricted to narrow zones. In these we find motives used as borders in the valley, notably the roundel (9, 10, 12), the hatched guilloche (4, 11), the hemisphere (1, 11), the hatched wavy line (9, 10, 12), etc. The whole set of patterns on a vase from Kulli (I, viii, 5) recurs at Mohenjo-daro (on C. 1980), where it may be an import.

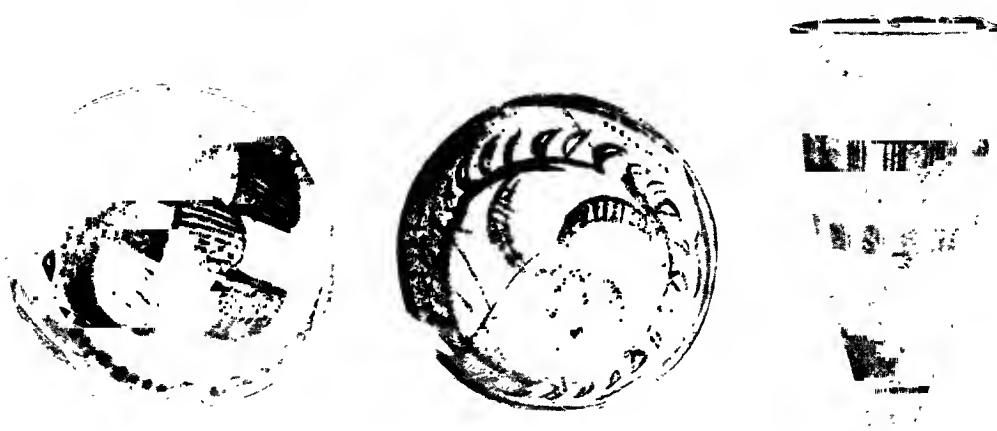
All these wares (Nos. 2-6 in Marshall's classification), therefore, seem to me merely barbarized or undeveloped variants on the tradition which culminated in the Indus style. Their general contemporaneity with the latter should follow from their general similarity, their association with imports, chiefly pottery, from the valley, and from the parallels, possibly counter-imports, at Mohenjo-daro itself. The exported Indus sherds may perhaps mostly belong to the Early or Intermediate phase at Mohenjo-daro. But one sherd from Moghul-ghundai (MM.N., 12) resembles the polychrome ware confined to the Late phase there, while others (MM.E., 3 and 13) might be compared with wares from the still later H cemetery at Harappa.

On the other hand, it is only to be expected that we should find in the hills more prominent "western" elements than are discernible in the Indus ware. I pass over as ambiguous Mesopotamian or Elamite parallels to the simpler triangle and chequer patterns. More significant is the sigma pattern which is quite common in southern Baluchistan and occurs also in Rakshan (7, BR. 3), Jhalwan (9), and even Loralai (3) and the Zhob valley (1, 2). Western, too, appears what Frankfort⁷ terms the "goat motive," which was also quite popular in Rakshan (8), and at Mehi and Kulli, but does not appear further north. These features may be due to archaism. Admitting that the hill pottery and that of the Indus valley share a common tradition, and that the community once embraced Mesopotamia, it will seem likely that the barbaric environment of the hills would be more favourable to the survival of archaic elements than the busy cities of the valley, where a sophisticated style was elaborated.

(In parenthesis, we may insert here a word on the local style of painting in vogue at Mehi and Kulli. Here the artists depict not only tiny stylized goats, but also big bulls and fishes. Though these are conventionally flattened and elongated to fit into a narrow zone, the details are rendered naturalistically. Frankfort (*op. cit.*) finds parallels to this treatment in Susa II. Indeed, he looks to Baluchistan to explain the naturalism of Elamite art at this phase. The analogy need not therefore be considered as illustrating a western element in Baluchistan. In reality, with the animals are associated pipal trees and other plant motives quite in the style of the Indus valley (M, 8; 14; II, 4, 5; K.V, v, 5; I, iv, 2).)

On the other hand it might be argued that one ceramic group found in Baluchistan, but not further east, provides the source of the "western" elements just noted; in the funerary pottery from Shahi-tump we can easily discern

connections with the west that are more than mere survivals. But these connections lie with Susa I and Samarra, not with the later cultures that flourished in Mesopotamia in the second half of the IVth millennium B.C. and at the beginning of the IIIrd. Yet the graves which have yielded the pottery occur at various levels—generally quite high up—in the ruins of a settlement from which, even at levels below the graves, Stein collected sherds similar to those heretofore considered, as well as models of humped bulls, bangles, and other objects distinctive of the Indian cultures. The graves must, therefore, be contemporary with, or later than the Indus civilization and its hill counterparts. The occurrence of sherds of Shahi-tump ware at other sites which have yielded normal Baluchi

FIG. 5. (Approx. $\frac{1}{4}$.)FIG. 6. (Approx. $\frac{1}{4}$.)FIG. 7. ($\frac{1}{3}$.)

wares (1, 4, 12) suggests that the discrepancy in date must not be estimated too highly.

Connections with Frankfort's⁸ Highland Culture in the form represented at Susa I and Samarra are attested by other traits in the Shahi-tump burials beside the pottery. The rite was inhumation, the corpse being either extended or contracted. The grave-goods include flat celts of copper as at Susa I, alabaster dishes as at Samarra, and lapis lazuli beads as at both sites. The pottery, however, is in itself conclusive.

The commonest shapes are the three recognized by Frankfort as typical of the Susa I cemetery—large open dishes (figs. 5, 6), straight sided tumblers (fig. 7), and squat pots (fig. 8, right). Incidentally, the dishes occur in regular nests as at Susa. A small bowl on a low pedestal (vi, 14, e) can also be matched at Susa. Indeed, only a couple of triple vases (iii, 4, and vi, 3), whose nearest analogues come from Susa II, and a tripod (vi, 14, a), with parallels further afield in Troy and Lesbos (*B.S.A.*, xxx, p. 19) and in China (*Mem. Geol. Surv. China*, A, 5, pl. X.) fall outside the normal Susa I repertoire.

The decoration is no less convincing. The centre of the big dishes is often occupied by a square with triangles at its four corners (fig. 4), which, following a hint from Prof. Minns, I propose to call a "Maltese square." Just the same peculiar figure often occupies the same position on dishes from Susa I and Samarra.⁹ On other dishes the centre is decorated with a swastika with curved arms (fig. 5), a figure which in its angular form is sometimes centrally placed on vessels from Susa and Samarra.¹⁰ A row of true angular swastikas adorned the little cup (Sh. T., vi, 15, b). These are doubtless magic symbols, and as



FIG. 8. POTTERY FROM SHAHI-TUMP. (½.)

such are a specially permanent element in the decoration of funerary pottery. At Shahi-tump all the motives are somewhat degenerate; they lack the proportion and vigour of the examples from Susa and are clumsily executed. The swastikas are even at times given an extra leg. The Shahi-tump decoration lacks the composition and lively style of the western sites. That may be a sign not only of barbarism, but of degeneracy and lateness. The same remark might apply to the goat motive which is treated in the manner of "Musyan" rather than of Susa I. It may finally be noted that a soft brush has been employed, capable of giving tapering lines, as in Elam and Mesopotamia, in contrast to the stiff "brush" used on the Indus and native Baluchi vases.

Technically, the agreement with the west is no less complete. The funerary vases are all hand-made, most are excessively thin, chopped straw has been used as a temper, most have been very highly fired so that the clay is almost vitrified, some have crumpled up with the heat just as at Susa I (*Rev. Arch.* xxiii, p. 7), and a slip is seldom employed. The colour of the product, however, seems curiously unlike that of the western fabrics. The more highly fired vessels have a porcelain-like texture and a dove-grey colour. But there are others of the same form or decorated in the same way, in which the body colour is pale pink or pinkish buff. The tint is, therefore, mainly a question of firing. There are sherds pink inside and grey outside (Sh. T., 119), or pink on the surface with a grey core (Sh. T., 103, vi, 14, d). And the pinkish surface is quite comparable to that seen on many sherds from Samarra.

Just the same range of tints is illustrated by Stein's sherds from wind-eroded sites in the Helmund delta in Sistan. These sites have yielded a pure grey ware, identical with the funerary ware of Shahi-tump (KG., 939; RR., 057; ii, 938 and iii, 018; SS., 0105, 015, 03, 074), and sherds which are pink on the surface but grey at the core (KG., 097; SS., 0119, 018). But in addition

there are sherds that are pink inside, but green outside (KG., 0135; RR., III, 06 and 08, and XVII, 05; SS., 052), while the majority exhibit the peculiar greenish surface tint so familiar not only at Samarra but throughout the al'Ubaid culture of Mesopotamia. Thus with the aid of the Sistan material¹¹ we can trace every stage of the transition from the green ware distinctive of Mesopotamia to the grey ware of Baluchistan.

Incidentally, the sites on the Helmund provide the necessary geographical link between Baluchistan and western Iran. In addition to pottery, the sites have yielded fragments of alabaster vessels and a copper stamp seal resembling in general form those from the graves of Shahi-tump.

At Shahi-tump we find not a mere survival of the Highland style of animal painting and technique of surface treatment, such as is illustrated by the pottery of Nineveh V¹² and Billa 7¹³ (which need not be much earlier than 2500 B.C.), but the Highland Culture itself with all the distinctive traits—burial rites, flat celts, lapis beads, as well as pot-forms and central motives—that characterize the culture in its earliest manifestations at Samarra and Susa. That means an ethnic movement, a migration. But since the Shahi-tump burials (being not appreciably earlier than 2500 B.C.) are at least a thousand years later than those at Susa I and Samarra, the direction of the migration is unambiguously defined: it must have gone eastward. (Incidentally may not this demonstration support Woolley's thesis that the al'Ubaid culture really begins earlier than Susa I?)

The eastward spread of the Highland Culture demonstrated by Shahi-tump might explain the western motives in the native Baluchi decoration noted on p. 21; it cannot explain the underlying kinship in ceramic techniques between India and Mesopotamia in the Jemdet Nasr or Uruk period, for the technique must have been established in India long before the graves were dug in Shahi-tump ruins. And the technique in question is not that illustrated in the funerary pottery.

Light will be shed upon this problem when Mr. Majumdar has published the results of his excavations at Amri. At Mohenjo-daro and Harappa only minor variations in the pottery could be detected between the highest and the lowest levels examined; red slip ware with patterns in black was common from top to bottom. At Amri Majumdar found this typical Indus ware in the upper strata, but a different fabric lower down. Though I have had the privilege of handling the material, it must naturally await the excavator's description. I may, however, say that on the early pottery the designs are applied either to the pale pinkish clay surface or over a buff or cream slip. They are executed in a warm black, frequently combined with a plum red. In tint this red agrees precisely with that used on the Jemdet Nasr ware of Mesopotamia. It is generally used only for horizontal ribbons, but sometimes also for filling in figures such as triangles.

The patterns include, on the one hand, the sigma motive of the Highland Culture, and triangles, lozenges or chequers such as are common at Jemdet Nasr, on the other, curvilinear motives foreshadowing the classical Indus intersecting circle decoration.

Majumdar's discovery not only promises to confirm and clarify the connection between the ceramic technique of the Indus valley and that of Mesopotamia in the IVth millennium B.C.; it also offers a solution to some of the obscurity surrounding the Baluchi wares. The pale-slip group among these is now seen to be western, indeed, in as much as it goes back to a tradition also active in Mesopotamia, but not in any sense contrasted with lowland India,

since the same tradition is detected there behind the classical Indus ware. The pale-slip wares of the hills would then just be archaic.

In the same way it will be possible to explain the character of a ceramic group hitherto omitted, the wares found by Hargraves at the Sohr-damb in the Nal valley¹⁴ and by Stein in the next valley at Nundara.¹⁵ These fall into the group of pale wares, the background of the design being generally a light coloured clay or a pale slip. The motives are outlined in black, but generally filled in with red, often combined with blue, green, and yellow. The red is identical in hue with that from Amri. These elements are used for the representation of finely stylized animals combined with geometric figures blended into a conscious decorative style almost as sophisticated and effective as that prevailing in the Indus valley itself. There is no reason to suppose that this style is materially different in age from the latter, or from the barbaric Baluchi fabrics previously considered. Vases decorated in the Nal style have, indeed, been found at Mehi (iv, 2, 7), Kulli (38, V, iii, 7), and elsewhere, while sherds in the normal Baluchi manner occur at Nundara (Nun. I, 5; I, 14). The style might well be regarded as a sophisticated development of that of Amri, parallel to the classical Indus style. Indeed, sherds there and at contemporary valley sites seem to foreshadow Nal motives.

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REFERENCES.

¹ JRAI, 1930, pp. 131 ff.

² *Ibid.*

³ *Ibid.*

⁴ *Mohenjo-daro and the Indus Civilization.*

⁵ Matz, *Die frôhkretischen Siegel*, p. 136.

⁶ Oppenheim, *Tel Halaf* (London, 1933).

⁷ *Archaeology and the Sumerian Problem*, p. 70.

⁸ *Op. cit.*, p. 25.

⁹ Herzfeld, *Die vorgeschichtlichen Topfereien von Samarra*, pl. XXIII, 123.

¹⁰ *Ibid.*, p. 9.

¹¹ It illustrates also the route followed by the Maltese square (Stein, *Innermost Asia*, pl. CXIII, MD., II, 03, and SS., 048).

¹² LAAA., xix, p. 83.

¹³ *Mus. J.*, xxiii, p. 252.

¹⁴ *Mem. Arch. Surv. Ind.*, 35, 17 ff.

¹⁵ *Ibid.*, 43, 139.



THE PHARAOH'S THIRD TITLE.

THE third title in the royal titulary (fig. 1, No. 3) has always been a matter of some uncertainty. It was translated as "The Golden Hawk" by the earlier Egyptologists, a translation which still finds favour with Dr. Alan Gardiner. "Golden Hawk," however, means nothing in itself, and the evidence which can be adduced for the reading is too late in date to be of value in indicating the original meaning. Professor Sethe has suggested that the group is a rebus reading "Horus over Seth," which certainly gives the sense of the Greek equivalent ἀντιπάλων ὑπερτέρος "Superior to foes," *i.e.*, Invincible. But so elaborate an explanation does not fit with the simplicity of the other royal titles, which have reference only to the King as a person or to his position as the ruler of the Dual Kingdom, never to battle or conquest.

Of the five titles the earliest is the Horus, where the falcon-totem of the King stands above the *s-rekh* on which the King's name is inscribed (fig. 1, No. 1; fig. 2). This title dates to the reign of Narmer, who also used the title of  *Ni-sut-byt* "He of the Reed and the Bee" (fig. 1, No. 4), when he united Lower with Upper Egypt; the union being symbolised by the emblems of the two kingdoms placed side by side. The next title to come into use was  *Nebty* "The Two Ladies" (fig. 1, No. 2); again a title indicating the union of the two parts of Egypt symbolised by the goddesses of the South and North. Aha, the second King of the Ist dynasty, was the first to use this title. Shaaru, the first king of the IVth dynasty, brought in the  "Son of the Sun" (fig. 1, No. 5). The "Golden Hawk" was also a late title, as its earliest occurrence is among the titles of Shaaru. This fact is peculiar, as there is no apparent reason for the invention of a new title as in the case of the "Son of the Sun."

The order of the titles appears to be invariable and suggests that it was intentional, perhaps referring to the order in which they first came into use. This can be seen in the first and fifth; No. 1 belongs without doubt to the earliest dynastic Kings, No. 5 first occurs when sun-worship was introduced, but was not adopted regularly till that worship was fully established in the Vth dynasty; their position as the first and last of the series appears to be intentional. Nos. 2 and 4 seem to be contemporary, but in our present state of knowledge No. 3 does not fit into this scheme. In analysing the titulary still further, it is clear that Nos. 1 and 5 belong to the person of the King; the first is his name as the incarnate falcon-god, while the title *Son of the Sun* shows that he was the physical offspring of the sun-god. Nos. 2 and 4 refer to his official position as King of the Two Lands. Again the third title, as at present translated, is not accounted for.

I suggest therefore that the group of the "Golden Hawk" (fig. 1, No. 3) is a late form of an earlier sign. The two graffiti at El Kab, where it occurs above the names of Shaaru and Khufu, give the clue. The sign has two falcons, the first wears the crown of Upper Egypt and must be the god of that country, Seth; the other has the crown of Lower Egypt and must represent Horus. Both stand on the gold sign, which is here probably a generic name for the cult-centres of Seth; this would account for the occurrence of more than one Ombos (Nubt) and also for the joint temple of Horus and Seth at Kom Ombos, where the two gods had an equal worship. The correct appellation of the god of Upper Egypt

was Nebty, "He of Nebt"; even as late as Pyramid times (fig. 8) the figure of Seth is clearly only the determinative of the word *Nebty*. The late form of the group represents then the two gods, Horus of Lower Egypt in the form of his sacred bird, and Seth alluded to by the epithet Nebty. The sign would then read *Nebui* "He of the Two Lords," and would be parallel with the second title, "He of the Two Goddesses." If this is so, the title instead of being meaningless would convey the same idea of sovereignty over the Two Lands already indicated in the Two-Goddess title and in the *Ni-sut-byt*. The whole titulary thus makes a symmetrical group with the dual titles in the middle and the personal titles at the beginning and the end.

If this title reads *Nebui* the earliest form is seen in the primitive  on a bowl of Zer, which Petrie has already translated as *The Double Lord* (Royal Tombs II, p. 49)). Three Kings bear this title, Sma-y, Dy, and Zeser, all belonging at the latest to the 1st dynasty. It is fairly certain that the conquest of the north was not due to one King only, though Menes always has the full credit. A parallel conquest of the north took place in the early New Kingdom when Aahmes I had the credit, though his predecessors, Seqenen-Re and Kames, had done a large part of the work. If Sma-y and Dy had already conquered part of the north, they might well adopt the Two-Lord title to indicate their divine sovereignty. The Two-Goddess title shows sovereignty of an earlier type, though still definitely religious, for the worship of a goddess is earlier than that of a god. The fourth title indicates the secular authority over the Dual Kingdom. Another interesting grouping of the titulary then emerges; the first three titles are clearly religious, and the names associated with them would be under divine protection; the last two are the titles of an earthly king, and the names are those of a human being, as such they are enclosed and preserved against danger.

The parallelism between Horus and Nebty is evident when the *s-rekh* of Perabsen (fig. 9) is compared with those of the Followers of Horus; and it has long been acknowledged that the two gods could be combined in one title, as in the case of Kha-sekhemui (fig. 10). In another example of Khasekhemui's titulary (fig. 11) the two falcons facing one another are probably a variant of the Nebui-title, with an appropriate epithet following, *Hetep-ymy-f*, while Khasekhemui is the epithet for both the *Ni-sut-byt* and Two-Goddess titles. The same type of combination is found in Neter-khet's titulary (fig. 14); the Gold-sign can be read by reference to fig. 15, where after the royal name the sign is surmounted by the sun-disk, and is perhaps a variant of the title though still reading *Nebui*, *i.e.*, Re and Nebty, and followed as is customary by an epithet, "A cycle of life and power."

The combination of the two gods, Horus and Seth, could be well represented by the Greek equivalent. Seth was the god of battle, and invincible except by the might of Horus. Any King under the protection of these two redoubtable deities would also be invincible, and could therefore be called "Superior to foes."

The queen's title (figs. 12, 16) begins in the 1st dynasty but is discontinued after the Old Kingdom. It probably reads "She who sees Horus-Nebty." At Abydos three women bear the title, all of whom were buried, perhaps as sacrifices, at the tomb of King Den. There were three queens of the Old Kingdom buried at Saqqara, Nebty Neb, Khuyt, and Mer-es-ankh.

EGYPT AND THE CAUCASUS.

A LARGE number of precious archaeological monuments lie hidden in the Caucasus, the latter having always been the link connecting the old cultures of Eastern Europe with the highly developed cultures of the Mediterranean basin and the ancient East. The history of the Caucasus offers therefore extremely valuable material for historians and archaeologists, although it has been hitherto studied very insufficiently.

The most valuable information about the cultural relations between the old Caucasus and the countries of the ancient East is to be expected from the monuments of the chalcolithic and bronze cultures of the Koban type in the Euxime region.

The northern and central Caucasus is saturated with remains of this culture, particularly in the Ossetian, and the Kabarda-Balkaria Autonomous Regions, where it is clear that we must concentrate our principal investigations ; some finds I made in 1931-32 pertaining to the domestic life and cultus induce me to assume that the bronze and also the chalcolithic culture were well developed. This region, and particularly Kabarda and Balkaria, possesses extensive copper ores which perhaps are not exhausted even now, and this fact certainly accounts for the abundance of bronze objects discovered there. I have found many lumps of copper pyrites in a valley of Balkaria. Evidently the tribes which were dwelling there in prehistoric times constantly extracted and worked copper ores.

The great importance of the working of copper and bronze in the cultural life of the old Caucasus will be evident if we remember that in Egypt, the oldest and the most cultured country of the East, copper and bronze were the principal metals worked. The appearance of copper caused a cultural revolution of such extent that references thereto are even found in the works of Roman authors (Lucretius, *De rerum natura*, 5, 1284-1290).

Many bronze objects of most diverse kinds, chiefly arms and ornaments, have been found in the numerous tombs of the northern and central Caucasus, and particularly in the famous tombs of Koban, not far from Vladikavkaz. Numbers of bronze objects have also been discovered quite recently in the tombs of the Kabarda-Balkaria Region, particularly in the vicinity of the Baksan gorge and the mountainous region of Balkaria (near Gundelen and Bilym). In various respects these latter objects present close analogies with those found at Koban :—

1. At Koban a small hafted stone hatchet has been found and described by P. S. Uvarova. It is made of grayish shale. Its dimensions, height 8 cm., width at the opening 5 cm. The whole hatchet is very finely polished. The hammer part of it is bent slightly downwards. The opening is circular.¹ P. S. Uvarova found it possible to attribute this hammer-hatchet to the bronze age.

This Koban hatchet may be compared with a similar stone hatchet found in 1931 near Nalchik. The dimensions of the latter are also very small : length 12 cm., width of the blade 5 cm., diameter of the head 3 cm., width of the hatchet 8 cm. This hatchet is fairly polished, and in the middle is bored a circular opening. The hammer part is bent slightly downwards. Since bronze objects were found with these hammer-hatchet, we can attribute it also to the bronze age. These minute instruments may perhaps have been symbols of power of

the tribal chief, and therefore were so carefully made. The ritual knives in ancient Egypt were also always made of stone, even in the most recent epochs.²

2. The ornament of the pottery found at Koban³ displays purely linear designs, cut into the material and painted white. They are oblique lines, squares, triangles, zigzags, broken lines, cross ornament, swastikas, firtree-designs, waves, meanders, etc. The decoration of the pottery (fig. 1) discovered near the stone hammer-hatchet in the tomb of the bronze age at Naltchik presents a close resemblance with the ornament just referred to; it includes common linear ornaments, oblique lines, zigzags, triangles and points.



FIG. 1. POTTERY FROM BRONZE AGE TOMB AT NALTCHIK.

3. The representations of animals discovered in tombs of the bronze age in the Kabarda-Balkaria Region (fig. 2), particularly in the gorge of Baksan, are doubtless akin to the "Koban animal style" or the representations of animals at Koban.

4. Finally, the characteristic feature of the Koban culture consists of burials in stone cists; these cists are made of unpolished slabs of local sandstone 12-15 cm. thick. A similar burial in a cist was found in 1931 in the village Zayookovo in the Baksan valley, another near Novorossiisk, in Gelendgik.

And if it is possible to parallel the Koban and the Assyro-Babylonian bronze objects,⁵ the objects discovered in Balkaria present some relationship with the ancient Egyptian culture. In this respect the most interesting is the little statuette of an anthropomorphic deity standing in the middle of a circle (fig. 3). This god, who perhaps may symbolise the sun, with his schematic, nearly geometric, lines recalls the representations of the dwarfish god Bes or Pateka. Of a late Egyptian period there have been found in Balkaria district several authentic Egyptian objects,⁶ including small amulets of the Hellenistic and Roman times, viz., a couchant lion, a tortoise and a statuette of the above-mentioned god Bes (fig. 4), whose cultus became very widely diffused during the period of decadence of the Egyptian culture. This fact may certainly be considered a convincing proof of the existence of cultural and commercial rela-



FIGS. 2-4. BRONZE OBJECTS FROM TOMBS
OF KABARDA-BALKARIA REGION.

tions between the Caucasus and the countries of the ancient East in the first millennium B.C. These relations connected the old Caucasus as far as the mountainous areas with Assyria, Babylonia and Egypt. The commercial routes between the Caucasus and the countries of the ancient East are as yet difficult to establish. They might have run either through the Greek commercial colonies on the coasts the Black Sea, or through the mountain passes, the countries of Nairi and Urartu, Anatolia, Mesopotamia and Syria. The numerous objects discovered in the Kabarda-Balkaria Region, such as pottery with linear designs and sometimes with small silver ornaments, perforated and polished small stone hammer-hatchets, and, finally, bronze objects belonging to the domestic life and cultus are evidence that in the first millennium B.C. there existed in the central regions of the Caucasus a highly developed culture connected with the cultures of the ancient East.

The existence of this connection can be demonstrated by a number of concrete facts besides the archaeological analogies just referred to.

In the Baksan valley, in dry beds of rivers and streams, I have found a considerable amount of obsidian or volcanic glass, of various tints from deep black to reddish brown. The splitting of large lumps of obsidian produces thin transparent flakes, like smoke-coloured glass. The edges of such flakes are so hard and sharp as to serve as a knife. And in fact we know that in the archaic epoch the Egyptians made small knives of obsidian. But as obsidian is not found in Egypt, they were obliged to import it from countries more or less

remote. Wainwright,⁹ who has carefully studied the question of ancient obsidian, assumes that the inhabitants of Egypt as well as the ancient population of Mesopotamia imported obsidian from Armenia. But since we have established the fact of cultural relation between the countries of the ancient East and the Central Caucasus, we can admit that the Egyptians may have imported the obsidian they needed from the Central Caucasus. The ancient inhabitants of the Caucasus also made various objects of obsidian. Obsidian arrow-heads have been found to the south in Tiflis, in Tsalka, in Redkin-Lager and in Nzchet, and small obsidian knives have been discovered in the Kabarda-Balkaria region.¹⁰

The metals are, after stone, the second important factor in the cultural development of humanity. Bronze is one of the oldest metals, and the discovery of it originated the bronze culture. The flourishing state of this culture in the Caucasus is attested by the tombs of Koban and by the burials excavated in the adjoining regions. On the other hand, this culture produced the classical metallurgy of ancient Egypt attested by numerous monuments and representations. In this connection the question of the origin of copper is of great importance. The Egyptians from the epoch of the earliest dynasties imported copper from the Sinai copper mines, which they exploited up to the XXth dynasty.¹¹ But from the epoch of the XVIIIth dynasty the Sinai copper evidently did not entirely supply their needs, and they were obliged to import it from Cyprus. The Babylonians also imported copper from abroad since they possessed no copper ores of their own. They may have imported it from Persia, the latter having extensive deposits of copper ore. Accidentally I discovered a considerable amount of copper pyrites in a valley of Balkaria. Further explorations may result perhaps in finding here more copious supplies of copper. At all events, the fierce wars with the Hittites waged by the Pharaohs of the XIXth dynasty and by the Assyrians with the mountain tribes of Nairi and Urartu may have had an economic base, viz., the want of metals in Egypt and Mesopotamia.

But since the Caucasus possesses copper ores, and since copper has been worked there from the earliest times, old worked out copper mines must remain there. By questioning old inhabitants of Kabarda and Balkaria I have found that traces of old copper workings exist up to the present time.

Finally, the chemical composition of Egyptian bronze has a close affinity with that of the Koban bronze. Egyptian bronze—its name  according to Erman¹² is akin to the old Hebrew word—and particularly the bronze vessel No. 3553 in the Cairo Museum, contains 88.32 per cent. of copper. The Koban bronze objects contain the following percentages of copper: 87.95, 88.12, 89.25, 88.47, 86.61, 87.85, 88.90, 88.52. We see that in three cases out of eight there exists a very close coincidence between the copper contents of the bronzes from the two sources.¹³

Metals and metallurgy form the base of the culture of the old Caucasus from the chalcolithic period and through the bronze to the iron age. The technique of casting had reached there a high degree of development, as may be seen from the Koban hammers and small bronze objects found in tombs of Ossetia, Kabarda and Balkaria.¹⁴ Most of these objects can be readily divided into two groups: arms and ornaments. To the first group belong the hammers and daggers; the second group includes pins, fibulae, belt buckles, ornaments with figures, rings, bracelets, etc. As to the technique of the treating of metals, mention should be made of the method of inlaying bronze belt buckles with iron—a proof that iron was known at this epoch in the Caucasus but was still a rare and expensive metal.¹⁵ These Koban bronze buckles inlaid with iron can be

compared with the Egyptian bronze statues inlaid with fine silver threads. According to Flinders Petrie this technique of ornamenting metals with other metals still exists in India, where it is called "Keft work";¹⁶ and we know that the Egyptians called the Aegeans "Keftiu." It is not improbable that the highly developed technique of treating two different metals was, then, a characteristic feature of the old Mediterranean cultures. Very important, although hitherto rather obscure, is the question of the technique of fabrication and using of tools. The plough found in one of the burials of the Kabarda-Balkaria Region, and now included in the local museum, may be cited as an instance thereof from a very late epoch. The characteristic feature of this plough consists of a long chain, manacles and collars. Evidently it was destined for ploughing with men, viz., slaves or prisoners of war. Without drawing any inferences therefrom I should like to allude to a little analogy from ancient Egypt. A wall painting of the tomb of Paheri¹⁸ in El Kab from the epoch of the XVIIIth dynasty represents a plough drawn by four men. The plough is directed by a tall and bearded man. Behind, the sower strides with his small basket of grain.¹⁷

The ceramics of the old Caucasian bronze cultures are distinguished by their plain shape, simple technique, and ornament. Most of the forms are squat pots, with short and broad spouts, and irregularly shaped handles, but some specimens display an individual character. Such is a more slender vessel with symmetrically placed handles, found in the excavations beyond the village Volny Altü, near Naltchik. The ornament is mostly linear, schematic, nearly geometric, and in this respect shows a close relationship to that of the archaic Egyptian vessels distinguished by their schematism and geometrism, although this type of ornament is to be met in several other countries.

But if the decoration of ceramics is extremely simple and archaic, that of metal objects, such as hammers and belt buckles, is exceedingly rich and complex. The most characteristic fact which allows us to establish a parallel between the Koban and old Egyptian art is the abundance of snakes, spirals and ram horns in the decoration of the Koban metal objects. These rather complicated figure ornaments remind us of the old Egyptian uraeus, the horns of the ram-headed god Khnum, and the spiral, which has some resemblance to the Aegean designs. Evidently we have here either a single cultural circle, or very old relations which connected the whole Mediterranean basin into a single cultural body.¹⁸

As to the people of this old bronze (and particularly the Caucasian bronze) culture, the present state of the ethnology of the Caucasus does not allow this question to be answered. We may conventionally use any ethnical term, but it is not easy to establish its exact meaning. Herodotus introduced the term "Kimmerians,"¹⁹ But we know nothing about them, beyond isolated information given by the great Father of History. We can only infer therefrom that the Kimmerians dwelt not far from the Scythians and had wars with the latter, that the Scythians occupied the country of the Kimmerians and drove them out from Europe into Asia; furthermore, we know that the Kimmerians often collided with the neighbouring inhabitants of Asia Minor, and that their invasions reached even Lydia and Ionia. Finally, as to the extent of diffusion of their culture, the latter seems to have covered an extensive area from the South-Russian steppes to the confines of Lydia and Mysia. These data of course needs to be carefully verified on archaeological grounds, but one fact throws a valuable light on this obscure question. We know that a close relation exists between the bronze and megalithic cultures of Southern Russia and the Northern Caucasus



FIG. 5.—DEFORMED SKULL FROM TOMB IN KABARDA-BALKARIA REGION.

from the chalcolithic up to the early iron age. This relation connects more or less closely the cultures of the south of Russia (Usatovo, near Odessa) through Gellendgik (area of megalithic culture) with the Central Caucasus. Further investigations must throw a light on the continuance of this cultural chain through the ancient areas of Urartu and Nairi to the oldest cultural homes of Eastern Asia and Egypt.

While presenting this problem, studied as yet very insufficiently, I should like to mention an anthropological detail. Throughout this whole area, including the Crimea, many deformed skulls have been found.²⁰ I have seen in the Museum of Naltchik several such highly deformed skulls (fig. 5), found in the Kabarda-Balkaria Region. Such skulls, which perhaps may have belonged to macrocephals described by Hippocrates and Pomponius Mela, are met with in different countries. Dubois de Monpérét in 1832 had seen three such deformed skulls, and attributed them to Kimmerians.²⁰ Further finds augmented the number of deformed skulls known. Many such skulls have been found in the Crimea near Kerch, Inkerman and Bakchisarai. Many of them also have been found in the Caucasus in the excavations of the Samtaur tombs near Mzchet (Tiflis), in Sartachali, and in the valley of the Baksan river. The custom of deforming skulls was still maintained up to the end of the XIXth century in several regions of the Caucasus, viz., in the Tiflis district (Kartalinia), in the Akhaltsich, Sigkach, Dushet and Rachinsk districts of the Kutaiss Government, by the Tatars of the Echmiadzin and of the Sheruro-Dalagaevsk districts, by the Kurds in some localities of Daghestan, by Armenians in Turkish Armenia near Erenkioi, not far from Kadikoi (old Chalcedonia), and Asia Minor. This custom was so deeply rooted that, according to Weissbach and Anuchin, it existed in the XIXth century among Armenians, Georgians, Turks, and even perhaps among the Greeks of Asia Minor.²¹ Finally, deformed skulls have been discovered in the European part of Russia, and in several countries of West Europe. These skulls, as Anuchin observes, belong to different epochs, and form two separate archaeological groups. The oldest group pertains to the beginning of the iron age, the more recent to early mediaeval

times, the Samtaur and Kerch skulls filling up the gap between these epochs. Anuchin wisely abstains from attempting to resolve the problem of the nationality of these "macrocephals." He only states that these skulls belonged neither to Greeks nor to Scythians, but must have been those of alien tribes.²² Without entering into particulars of this intricate anthropological and ethnological problem, I only mention one fact. On most of the representations of the Amarna period, Akhenaten, his relations and persons of his entourage have unnaturally elongated skulls, strikingly like the artificially deformed skulls just referred to. Thomas parallels the artificially deformed skulls of girls of the tribe Mangbettu in the Congo²³ with the skull of one of the Pharaoh's daughters. We may compare all these skulls, and establish the existence of a widely spread custom of deforming the skull dating from the bronze age or the beginning of the iron age. Further investigations will throw light on this problem.

In the light of these facts we can verify and correct Herodotus in respect of the close affinity existing between the Egyptians and Kolchidians who had the same manner of preparing linen, of performing circumcision, and who had identical habits and spoke the same tongue.²⁴ Not everything is true in this statement of Herodotus, but we can extract therefrom a kernel of truth. The whole Eastern and Mediterranean world formed a single cultural complex connected by commercial and cultural ties. And this old and highly developed *orbis antiquus* enclosed such apparently provincial and non-accessible countries as the Central Caucasus. Further archaeological investigations must establish the routes these cultural and commercial relations followed. They might have run in three different directions: (1) through the countries Urartu and Nairi into the old cultural regions of Mesopotamia, (2) through Asia Minor and Syria into Egypt, or finally (3) through the commercial towns of the coast of the Black Sea, in the Crimea and in the Caucasus, to the oldest seat of Eastern culture, viz., Egypt. In this connection many facts acquire a keen interest, for instance such as are given in the paper of the English archaeologist, Flinders Petrie, who compares the mythological toponomy of the "Book of the Dead" with the real toponomy of the Caucasus.²⁵

I abstain from entering here into the discussion of this evidence, and the only inference I should like to draw is that the early Caucasus and ancient Egypt were included in a single cultural complex, the different parts whereof were connected far more closely than has been thought hitherto and even than is thought now.

Moscow, January 12, 1933.

V. I. AVDIEF.

NOTES.

The history of the question:

1. Miller, V.: Terskaia oblast. III. Archeologitcheskie ekskursii v gorskie obshestva Kabardi (Balkaria, Baksan, Tchegem). Materiali po archeologii Kavkaza. I. Moscow, 1888 (Russian).

2. Uvarova, P. S.: Mogilniki severnogo Kavkaza. I. Moscow, 1900 (Russian).

3. Chantre: Récherches anthropologiques dans le Caucase.

4. Virchow: Das Graeberfeld von Koban im Lande der Osseten, Berlin, 1888.

5. The articles of A. Miller in the Soobchenia of the GAIMK, N. 1, 1926. N. 3, 1931 (Russian).

6. Piotrovski, B. : Egipetskije predmeti v severo-kavkaskom kraje. Soobchenia GAIMK, N. 6, 1931 (Russian).
7. Bikovski, S. N. : Japhetitcheskii predok vostotchnich slavian-kimmeriitsi. Isvestia GAIMK, 1931 (Russian).
8. Gorodzof, V. : K voprosu o kimmeriiskoi kulture. RANION, Moskow, 1928 (Russian).

FOOTNOTES.

1. Uvarova, P. S. : Mogilniki sev. Kavkasa, p. 23 (Russian).
2. Herodotus. II, 86.
3. Uvarova, P. S. : *Op. cit.*, p. 72.
4. *Ibidem*, pl. 46, N. 1. A small mirror is in the Historical Museum of Moskow. Inv. N. 63, 501.
5. Gauthier, G. V. : Otcherki po istorii kulturi vostotch noi Evropi, vol. I. Moscow, 1925, p. 104 (Russian).
6. Some of these Egyptian objects belonging to a late epoch, and particularly small scarabs, a representation of a couchant lion and a figure of a tortoise, are reproduced and described in V. Miller, *op. cit.*, pp. 86, 87, 98. Cf. B. Piotrovski : Egipetskije predmeti v severno-kavkaskom kraje. Soobchenia GAIMK, 1931, June, N. 6 (Russian), and my article in "Krasnaja Niva," 1931, N. 23 (Russian).
7. Chantre : *Op. cit.*, vol. i., pp. 52-53.
Materiali po archeologii Kavkaza, vol. 9.
8. Bénédite, G. : Monuments préhistoriques de l'Abyssinie méridionale. Revue de l'Égypte ancienne, 1925.
9. Frobenius : Das unbekannte Afrika, 1923.
10. Baumgaertel : Dolmen und Mastaba, 1926.
11. Lucas : Copper in ancient Egypt, Journal of Egyptian Archaeology, 1927.
12. Erman, A. : Das metall *h̄smn* A.Z. 30, 1892, pp. 31-35.
13. Lucas : Analysis of bronze and copper objects. Annales du Service des Antiquités de l'Égypte, vol. 1, p. 3, 1900, p. 288.
14. Virchov : Graeberfeld von Koban, pp. 92-93.
Chantre : Récherches, vol. 1, pl. 1.
15. Gauthier, G. V. : *Op. cit.*, p. 104.
16. Flinders, Petrie : Arts et métiers de l'Ancienne Égypte, 1912, p. 120.
17. Lepsius, Denkmaeler : Abth. 3, Bl. 10, El Kab Grab 3.
Tylor and Griffith : Tomb of Paheri, 1894, pl. 3.
18. Uvarova, P. S. : *Op. cit.*, p. 72.
19. Herodotus : iv., 11, 12.
20. Anutchin, D. N. : O drevinich iskustvenno-de-formirovannich tcherepach, naidennich v predelach Rossii, Moscow, 1887, pp. 1-2 (Russian).
21. *Ibidem*, pp. 31-42.
22. *Ibidem*, pp. 65-66.
23. Thomas : Deformation of the Head, Ancient Egypt, 1925, I, p. 3.
24. Herodotus : II., 104, 105.
25. Petrie, Flinders : The origins of the Book of the Dead, Ancient Egypt, 1926, II, pp. 41 sqq.

RARE SCARABS.

SEVERAL scarabs that have been acquired by University College in the last few years are so unusual as to deserve notice. They are here drawn double size.

1. Ra-ne-user, V, 6. "Beloved of the gods, beloved of Hathor." Cylinder of wide bore, white metal, base silver (?).

2. Teta, VI, 1. Brown. Type of back J, 70.

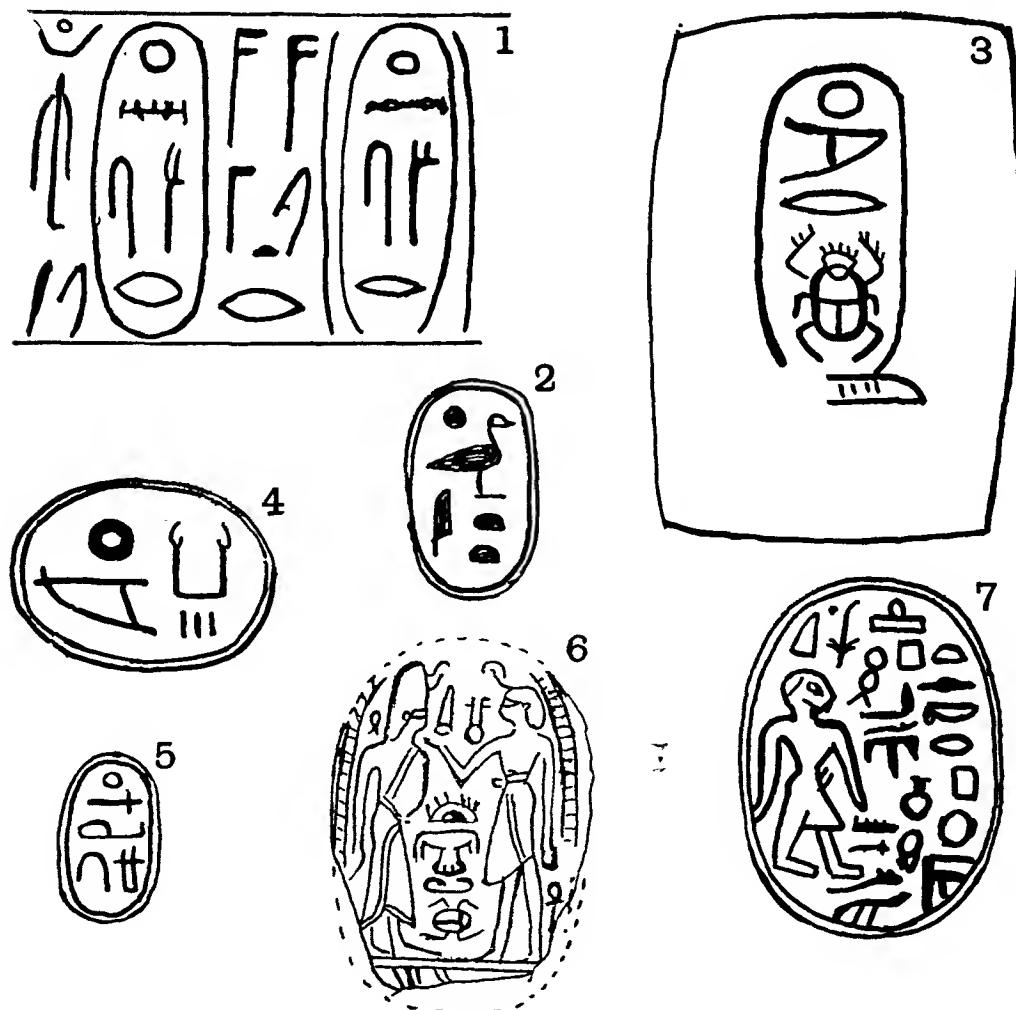
3. Ra-mer-kheper, XIII, 40. Brown. Flat back. This and the next show the high level of the XIIIth dyn.

4. Ra-mer-kau, XIII, 47, unique. Deep blue lazuli, fine work. H, 92.

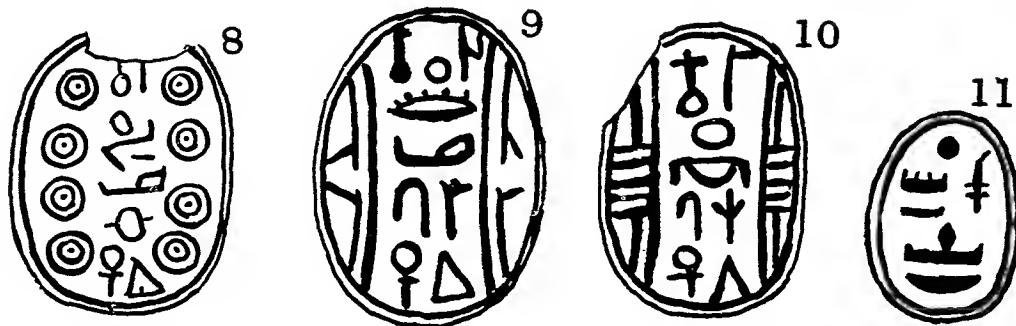
5. Apepa I, XV, 5. Brown limestone. J, 48.

6. A Hyksos Egyptian king before a Hittite king. The latter is not styled "good god", but "good king", by the tall triangle which here is the sign "king", and not "city." Whether *kha mub od kheper* belongs to the Hittite or, rather, to the Hyksos, is not certain. The lines are very fine, and the surface worn down so that only the bottom of the grooves remains. This is an important monument of the Hittite lordship over the Hyksos, hitherto unsuspected. It is cut on black steatite, with green glaze almost worn away. Type W 57.

7. *Pekh-ab*. The funeral formula is very rare—perhaps unique—on scarabs



Hetep da nesu Ptah-seker ama per kheru Pekhab sa Men-oo-f? The latter part is roughly cut and obscure. T, 4. Brown.



8. *Ra-mao-ab*, a well-known Hyksos, for whom the ring border is new. T, 5. White.

9. *Ra-kho-user*, better work than usual for this Hyksos. T, 33. Brown.

10. *Ra-nub-sen?* A scarab of *Ra-nub-user* is known (Blanchard), but this cannot so be read. The last sign might be a growing plant, but the sign is unknown. U, 55. White.

11. *Ra-men-hetep*. In a tale the treasurer of Rahetep is said to have died in the fourteenth year of *Ra-men-hetep*. In accord with that connection this scarab is closely like those of Rahetep, and so confirms the historical knowledge of the late writer. G, 62. Green pottery, unique.

FLINDERS PETRIE.

CHINA AND EGYPT.

DR. KARLGREN'S book *Ordet och Pennan i Mittens Rike* (translated into English as *Sound and Symbol in Chinese*) is extraordinarily interesting as showing the method by which a picture-writing gradually changes to a phonetic writing. The Egyptian hieroglyphic script appears to have begun in the same primitive way, *i.e.*, as a series of pictures ; it is, however, worth noting the effect of the spoken language on the writing. It is only to a certain limited extent that the two scripts follow the same course of development. The similarity and contrast of the two show the wide difference in the mentality of the two races.

One of the earliest forms of writing, probably the most primitive of all, is the drawing of an object, *e.g.*, a picture of a fish to express a fish. A language thus written must necessarily consist at first of nouns only, each sign being an ideogram or picture of some concrete object ; after a time the picture of the object takes on a secondary meaning, and finally is used for its sound-value only.

There are many instances of this change in hieroglyphic writing. (1) The sign  is the picture of a large basket (fig. 1) ; as it contained the owner's property, it took on the transferred meaning of "possessor, lord" ; and as it was sufficiently large to contain the whole property, it also has the meaning "all, every." But throughout and in all its meanings the picture of the basket remains unchanged (fig. 2).

(2) The sign  in its earliest form (fig. 3) is clearly a mouth slightly open with the teeth showing. Even when the script is completely formed it can stand for the word "mouth," or, figuratively, for "speech, language" ; but the process of change had been in force from early times, so that by the 1st dynasty  was already used as a phonogram, *i.e.*, a sign representing a sound only, without reference to its actual meaning, and used as an alphabetic sign to spell out words where that sound occurred. This last example shows another development in writing.  appears to have been originally a biteral word, but in process of time the weak second radical dropped away and left only the initial. This alteration in phonetic value continued in the historic period, and is clearly seen in the sign . In Egyptian this was the equivalent of the two sounds  and  ; but in demotic and Coptic, the sign in its cursive form has become an alphabetic letter and is equivalent to  only, the  being eliminated.

(3) The sign , the picture of a hare, is evidently the method of expressing the word *wni* "To run, to hasten," the hare being the swiftest of animals. Later, it becomes the phonogram for the two letters *w* and *n*, without any regard to its original meaning.

A step in advance was made in picture-writing when the signs are used to express a quality or condition. This is done in many cases by the combination of two signs. Thus, in Egyptian, , the picture of a battle mace with the head of white limestone, means "white" ; but when combined with the picture of the sun , it means "bright, shining." , the blackish scaly back of a crocodile, means "black" ; when combined with the sign of an inhabited place  it stands for the country of Egypt, the black soil of the cultivable area being characteristic of the Nile Valley.

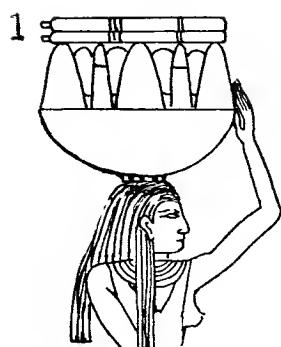
There are, however, a certain number of signs in Egyptian which never degenerated into mere phonograms. (1) One of the most interesting is the one-barbed harpoon  "w" "One" (fig. 4, the actual object, fig. 5, the hieroglyph). Its unchanging quality is in marked contrast with the two-barbed harpoon,  "sn", which, owing to its two barbs, means "Two" (figs. 6 and 8, the hieroglyphs, fig. 7, the actual object); but though it can always retain that meaning, it can be used in the transferred sense of "brother, equal"; and it occurs also as a phonogram, as in   "snr", where it is used for its sound value only.

The sign  is another of the signs which are never purely phonetic. Its original meaning is a tie; the loop encircles some object, a bow is made with several twists of the material at the knot, and the two ends hang loose (figs. 9, 10, 11). As a shoe-latchet it is placed with the sandals among the pictured possessions of the dead on Middle Kingdom coffins; but its use as a girdle was probably even earlier; and as it covered and protected the life-giving organs, its name 'nh' was transferred to the meaning "life, to live." A further transference of the meaning is seen in its use when combined with the sign of a man speaking  , where it means "oath," for the great oath of the law-courts was by the life of the Pharaoh.

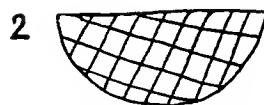
It will be seen that in Egyptian, as in Chinese, the different meanings of homophones can be shown by the use of "determinatives." Thus,  which means "house," can be given an entirely different meaning by the determinative of motion,  ; it then means "to come forth."   "dmi" can mean either "a town" or "to reach," according to the determinative which follows. In the same way  "mh" may be either "a cubit" or "to fill" according to the determinative.

In both Egyptian and Chinese the method of writing, which was evolved from the primitive picture-writing, was the kind which we now call *rebus-writing* and is used chiefly in children's puzzles. In rebus-writing the picture of an object is used for its sound-value and not for its meaning as a picture. Thus in Egyptian,  was originally the eye, and occurred therefore as the determinative of  "to see"; but in common use it represented the verb "To do, make," because the two words *yr* "To do" and *yr.t* "Eye," were homophonous. Another good example of the rebus-writing is the sign  (figs. 12, 13, 14); it is a picture of a hoe made of two pieces of wood lashed together where the blade and handle meet, and a rope is tied across to prevent the blade from breaking when in use. The early name of the implement was probably *mr* "the bound thing," *mr* meaning "to bind" (Copt. *mrp*). The sign retains this meaning to the last, but its common use is as a phonogram in any place where the syllable *mr* with a vowel between the two consonants, was required, as in  *mrh.t* "Ointment." The primitive hoe  (fig. 15) also survived in the hieroglyphs; it is a branch lopped roughly into shape, and is used for the phonogram *nw*. When a blade is attached and it becomes an adze (fig. 16) it still reads *nw*, unless the blade is striking a piece of wood when it is called *stp*.

So far the two scripts appear to have developed on similar lines, but the Chinese was hampered by a monosyllabic language, whose homophones are distinguished by the tone in which they are pronounced. These two disabilities prevented any real progress. In Egypt the language approximated to the Mediterranean and Semitic groups in that it had words of more than one syllable and that tone was of little, if any, importance. Chinese has no formal "parts of speech," for there are no means in a strictly monosyllabic language of forming



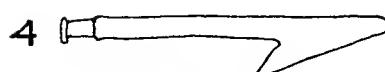
MURRAY. SAQ MAST. I
PL. X



PETRIE. ROYAL TOMBS I
PL. IV. 3



PETRIE. SCARABS & CYLINDERS
32, 62



NAQADA. PL. LXV. 8



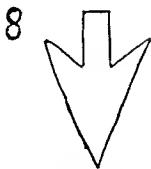
PETRIE. MEDIUM. FRONT. 13



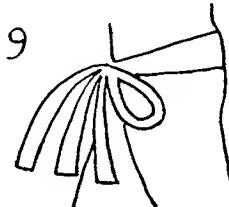
STELE OF HEKNEN
MEDIUM. PL. LXVI.



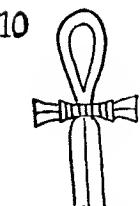
NAQADA. LXI. 14



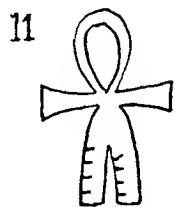
ROYAL TOMBS I
PL. XXXI. 13



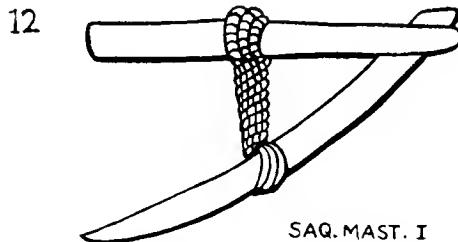
SAQ. MAST. I pl. XI.



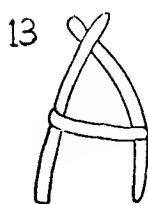
SAQ. MAST. I
PL. XL. 86



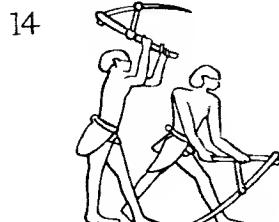
ROYAL TOMBS. I
PL. X. 13



SAQ. MAST. I
PL. XL. 75



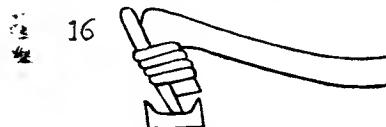
ROYAL TOMBS I
FRONTISPICE



STEINDORFF GRAB DES TI PL. CXI



DAVIES. PTAHHETEP I
PL. XIII. 276



DAVIES. PTAHHETEP I
PL. XIII. 277

declensions and conjugations ; a verb and a noun are interchangeable, the only means of understanding a sentence is by the order of words.

In Egyptian, though the order of words is important, it is not all-important, for in Egyptian there are particles which are so used as to form a kind of conjugation and elucidate the sense of a sentence.

Perhaps the most important difference in the two scripts is the fact that the Egyptians evolved a true alphabet from the picture-language, an alphabet by which foreign words and names could be spelt. This also enabled a writer to represent to a certain extent the vocalisation of his own words and their inflections.

The similarity of the two scripts therefore is only found in the early stages, where they approximate to other primitive picture-writings. When the language began to affect the script, the difference in development is at once visible.

M. A. MURRAY.



A TEXTILE FROM THE HOOD COLLECTION OF EGYPTIAN
ANTIQUITIES.

THE fragment of patterned linen shown in the illustration (*Frontispiece*) is believed to have come from Thebes, as did so many of the specimens collected by the Rev. Frankland Hood during the years 1851-1861. There is no evidence as to its date, but Sir Flinders Petrie thinks from the character of the weaving that it can probably be assigned to the period of the New Kingdom, and not in any case to so late a time as the Roman period. It appears to be part of a border with a fringe, probably from a garment, and measures about 17 c. by 11 c., exclusive of the fringe ; the fringe itself in its present condition measures about 13 or 14 c., and, no doubt, when stretched out to its fullest extent would be nearly 20 c. long. The border is ornamented with an interesting design in blue, red, and the natural colour of the linen, all so much darkened with age that a photograph cannot give a real idea of the beauty of the colouring.

A count of the patterned portion of the textile (marked x-x in the illustration) reveals a strange phenomenon—there are 426 warp threads at the top of it and 770 at the bottom, those at the top being in the natural shade, which for convenience sake we shall now call white, and those at the bottom being white, red, and blue, with the blue predominating. At first sight, one may be tempted to think that this strange design of stripes and wedge-shaped forms could be more easily carried out in a tapestry weave, and that what I am describing as warp may be in fact the weft ; but an intimate examination shows that the manner in which the design is carried out, though difficult enough in warp pattern technique, would be impossible in a tapestry weave.¹ There is no doubt in my own mind that the textile was woven as shown, with the warp threads running lengthways of the stripes, the selvedges having been at the sides, now torn away, and the fringe at the end of the warp. The border is the last part of the piece to be woven, and the pattern is of a very primitive type, *i.e.*, one made by the warp threads.

It can clearly be seen that the dark warp threads have been added in groups of 4-6 threads together, put through as weft in a loop and hanging down on either side of the white wedge which they outline to become subsequently incorporated into the warp ; and whenever a group of new threads is added a certain number of the original white warp threads disappear. The manner of the insertion of the new threads is in a loop at the broad end of the wedge, thus :—



FIG. 1.—WEFT THREADS ADDED TO BECOME WARP

Three throws of plain single weft were then made before another loop was inserted. The bulk of these threads are, as already said, blue ; the red threads, which figure only in two narrow bands of 8 threads each, are introduced in like manner, four threads at a time.

The weaving problems involved will be better understood if the reader will turn the photograph upside down and look at it in the direction in which it was woven, *i.e.*, towards the fringe. It will be seen that once the wedges were finished the weaving must have been straightforward enough, merely plain weave, for, the check pattern set up, alternate blue and white in the warp would come up automatically. The difficulty lies in the formation of the wedges ; as each loop of new threads was added, their ends would have to be passed either through heddle leashes or over a shed rod and be tied to the back beam before they could be woven in, which must have been a most delicate operation. It is extraordinary that the fabric does not show more weak and faulty places where the coloured threads were added and the white removed ; there is only a little disturbance and a few cut ends can be seen under a lens. A certain number of the original white warp threads, *i.e.*, 16 in the two plain bands and about 75 in the three check bands, do indeed run right through to the fringe and so help to keep all firm ; but still no less than 335 warp threads are taken out gradually down the slanting sides of the wedge pattern ! The lost threads are more than replaced by the coloured ones, for, as already stated, there are 354 more threads at the bottom, *i.e.*, the fringe end, than the top. Yet the fabric does not increase in width, for the warp threads have been drawn in closely together entirely covering the weft and giving the pattern its delusive tapestry appearance. Thus is achieved the complete change of texture from an open weave in white, as seen at the top of the piece, to a close weave in warp pattern, in red, white, and blue, at the bottom.

This abundance of threads at the end of the weaving gives a rich appearance to the fringe. It is kept in place by a couple of twisted threads held firmly by a stitch between each cord of the fringe. The cord itself is made of eight threads twisted together in two groups of four, and then all retwisted together in the opposite direction. This type of cord is common on Ancient Egyptian textiles, and it has survived on the fringes of the cotton "tobs" woven and worn in the Sudan, and on the fringes of Beduin woollen rugs—in Arabic it is called the "taftul," the "twist."

The measurements of the piece speak for its fineness. The dyeing must also have been good, for the red and blue are still strong though darkened with age. Possibly the colours were obtained with madder and indigo, though this cannot be certain ; in shade they much resemble the red and blue of the Rameses Girdle at Liverpool Museum.

The primitive character of the weaving is very marked ; it is such as would be carried out on the simplest of looms, one possibly with no more apparatus for making a shed than a rod heddle and a shed rod, and where the weaver was accustomed to put in pattern with his fingers and could allow himself a free and fantastic playing about with warp and weft. Such in fact was the horizontal loom of the Middle Kingdom in Egypt, as shown in the Tomb of Chnem-hotep. Different weaves can be made on this loom, either with warp and weft visible, or warp covered with weft (tapestry), or weft covered with warp ; but the last is much the easiest, owing to the natural tendency of the warps to draw together. It is, in fact, the preferred weave of the Beduins to-day, both for plain tent pieces and patterned ones. It is tempting to suggest that warp-pattern weave was known and developed on the Middle Kingdom loom, while tapestry weave came in with the vertical loom of the New Kingdom. Both weaves continued to be used ; but in Roman times the much greater possibilities of tapestry weave

for patterns and designs of all kinds became realized and developed in the Coptic "weft mosaic," as L. Start called it, and warp pattern disappeared from Egyptian textiles except in the form of very narrow bands.² The evidence is slender, but one may mention here two of the outstanding Ancient Egyptian pieces in warp pattern, *i.e.*, the Rameses Girdle and the fine piece in the Victoria and Albert Museum; also I venture to suggest that when the magnificent textiles from the Tomb of Tutankhamen are more fully studied certain of the pattern bands on the "dalmatic"³ may prove to be also in this warp pattern weave.

The textile we figure here comes, as has been seen, into this warp pattern class; but so far I have found nothing to compare with the peculiar way in which the pattern is carried out, in which it appears to be unique.

1. I have proved this to my own satisfaction by weaving a reproduction of part of the border as a warp pattern.

2. Some of these are in tablet weave.

3. *Illustrated London News*, August 3rd, 1929, p. 197.

GRACE M. CROWFOOT.

RHYMES AND RAIN-CHARMS.

ALL countries have songs sung to and by children, and Egypt is no exception. Undoubtedly such songs existed in ancient times, but they have not come down to us in recognizable form. Comparatively few of the modern nursery rhymes of Egypt have been collected; of those few the antiquity cannot be proved, though they probably come down from Pharaonic times. It is not surprising that the ancient songs of the children were not recorded in writing, for it is only within the last two centuries that collections of children's rhymes were made, originally for the sake of the children themselves, then later on for scientific study. As neither of these two reasons existed in ancient Egypt the children's songs are almost entirely lost, except for the few which may be regarded as survivals.

The collections of modern Egyptian nursery rhymes are far from exhaustive. Mr. J. Walker has published a number in "Some Folk-Rhymes of Egyptian Children" (*Folklore*, XXXVIII, 1927, p. 375), giving references to other collections. These are, however, only a few out of the hundreds used in Egypt, a country which has as rich a store of nursery rhymes as England. Though, as in all countries, many of these songs have arisen merely to amuse children, a certain number are survivals of ritual words. I called attention some years ago (*Folklore*, XXXVI, 1925, p. 186) to a ritual finger-counting which dates back to the XIIth dynasty. This shows that counting rhymes had probably a definite

(1)

هَنْ هَنْ هَنْ
يَالِسْ مَلِيْتُ الدَّنِيَا فَنْ
هَنْ هَنْ هَنْ
هَفْنَدْنَهْ بَالَوْلَا

(2)

لَا قَالَهَا رَا عَلَمْ
أَسْنَدْهَا أَبُوهُ وَفَلَمْ
وَجَهْنَهْ الْجَمَابِيْبِ صَفْنَى
وَعَهْ فَرَصْنَى مَا جَانَى مِنْهُ

(3)

لِيَنْهَ يَاصْبِيْ مَا إِحْدَاهَا
بَاتَتْ حَمَابِيْ فَرَحَانَهْ
وَعَدْوَنْ بَاتَتْ بَالْفَرَوْرَ

(4)

لَا قَالَهَا رَدَى بَنْيَةَ
قَلَهْ يَالَّهَ حَسْنَى
بَنْيَهْ الْجَيْسَنَهْ أَصْحَى بَنْيَةَ
شَفْنَى وَحَنْ عَنْ

(5)

يَاعَوْ وَأَيْسَهْ مَاهَ
أَيَاهْ عَالَهْ الْمَوْعَنَهْ
وَاهْ جَاهْ الْمَعَنَهْ يَنْهَيَهْ
وَاهْ جَاهْ الْمَعَنَهْ عَالَهْ

TO cast out a devil.

- 1 الحجر مات
- 2 فاح الخبر
- 3 غسلناه
- 4 بشة الحمار ذكر
- 5 كفتناه بجشر البصل
- 6 دفتناه سبعه مننا وسبعه منكم
- 7 يا اولاد مطر

religious value at an early period of history and have degenerated in course of time to their present lowly position. The ritual finger-counting was to be used by the soul of a sorcerer (*i.e.*, a learned man) to enable him to enter the kingdom of Osiris, for that god would not receive anyone who could not count his fingers. This religious aspect places a counting rhyme in the same category as a spell. Our own "This little pig went to market," and the modern Egyptian song of the Egg ("This is the Egg. And this is the one who brought it. And this is the one who boiled it. And this is the one who peeled it. And this is the one who ate it all up.") are played and sung in the same way, by pulling in succession the fingers or toes of the baby at each sentence, and ending the last sentence on a high note, not unlike the ending of a chant.

Of the rhymes given here, the first five are lullabies. It is interesting to note the feeling towards the girl-baby; her arrival is hailed with as much pleasure as the boy's. This fact suggests that the songs are pre-Moslem, possibly even pre-Christian.

1. Hai, hai, hai ! yalli maleyit iddunya dai
Haffaztak bil awliya wi bikul sheikh mayit hai.
Hai, hai, hai ! You that have filled the world with light
I asked the saints to guard you, and asked every sheykh who is dead
or alive.
2. Lamma 'aluli da gholam, ishtadd dahr abuh wi 'am
Wiguni il habeyib hannuni, wi min farhiti ma gani manam.
When they told me it was a boy, his father's back was straightened,
And friends came to congratulate me, for joy I could not sleep.
3. Leyltak ya sabi ma ahlaha, leyltak kanit hana wi surour,
Batit habayibi farhana, wa'diitti batit biddarour.
How sweet is your night, O boy, your night was all happiness and
pleasure.
My friends passed the night pleased, and my enemy passed the night
depressed.
4. Lamma 'aluli di binayya, 'ult ya leyla haniyyah,
Binti ilhabiba ahi gayya, tinfa'ni wi taken 'alayya.
When they told me it was a girl, I said what a happy night it is,
My loving daughter is coming to be useful and loving to me.
5. (The pronoun is varied according to the sex of the child.)
Ya helu wi aish hellak, iyak 'asallah il mout yinsak.
Wen ga il-mout yikhattik, wi hu ta'ale' yakhud 'idak.
O sweet one, what has made you sweet ? I wish to God that death
may forget you,
But if he comes to trample you, while he is coming may he take your
enemy.

The words for the ritual of casting out a devil appear to belong to a rain-charm.

1. Al-hagar māt.
2. Fah al-khabar.
3. Ghasalnāhu.
4. Bi-shahha'l himār dakar.
5. Kafannāhu bi-gashr al-basal.
6. Dafannāhu sab'a minna wa-sab'a minkum
7. Ya aulād matar.

1. The stone is dead,
2. The news has spread,
3. We have washed it
4. With the excrement of a male donkey.
5. We have shrouded it with skins of onions.
6. We have buried it, seven of you and seven of us.
7. O children of the rain.

(In a whisper) Gizz.

Each person puts a finger under the stone while the rhyme is repeated, and at "Gizz" they lift the stone up and throw it away.

The washing of the stone, the epithet *Children of the Rain*, and the long drawn-out second consonant of *Giz-z-z*, which imitates the swishing sound of heavy thunder-rain, all point to a magical means of obtaining rain. The reference to the donkey suggests that the ritual may belong to the primitive cult of the god Seth, who was the god of thunder-storms and to whom the ass was sacrificed. Rameses II claimed, in his dealings with the Hittites, to have power over the weather. When the Hittite princess was sent through Syria in the rainy season to Egypt to be married to him, he offered a sacrifice to Seth (Sutekh) for fine weather, and "his father Sutekh heard every word." Again in the letter from the Hittite chief to the prince of Kodé Rameses II is spoken of as the great over-lord, "Kheta is in his power alone; if the god accepts not his offering, Kheta will see no rain." (Anastasi, II, pl. ii, ll. 1-5).

The sacrifices for rain are not specified, but it is perhaps legitimate to suggest that they were the same as in Palestine. The two countries were intimately allied in civilisation, and there was continual intercourse between them throughout the period of the New Kingdom; it is therefore not unlikely that the Egyptians adopted a method derived from their colonies, where rain was of the utmost importance. One of the earliest historical records of such a sacrifice in Palestine was when the prophet Samuel "took a sucking lamb and burnt it wholly before the Lord; and Samuel cried unto the Lord . . . [and] the Lord thundered out of heaven." (1 Sam. vii, 9, 10.) The words imply that the lamb was burnt alive, a not uncommon method of sacrifice amongst savage tribes. On another occasion (1 Sam. xii, 18) Samuel "called unto the Lord; and the Lord sent thunder and rain." In the next generation human sacrifice was offered, when seven sons of Saul were sacrificed ("hanged before the Lord") on account of a drought and consequent famine (2 Sam. xxi, 8, 9). Elijah's great competition with the prophets of Baal on Mount Carmel was also a rain sacrifice. The ritual seems to have been somewhat the same that Samuel had used. Both parties killed a bullock and laid it on an altar to be burnt, but with the stipulation that no fire was to be set to the pile. The savagery of the rite is seen in the outpouring of their own blood by the priests of Baal, and later by the killing of those priests at the water-side as human victims to the Rain-god.

I have to thank Dr. Hasan Sadek, of the Geological Survey of Egypt, for the lullabies; Dr. R. Engelbach, of the Cairo Museum, for the Rain-charm; and Mr. Fulton, of the British Museum, for checking the transliteration and translations.

M. A. MURRAY.

THE UNITY OF MAN

“ SAXON, Norman, and Dane are we”—the metre could not include Rome—and Germans nowadays claim a pure “ Aryan ” descent ; but the roots of human nature go deeper than race and colour. Anyone with eyes to see may recognize our kinship with Rome in any collection of Roman sculpture, for features, attitudes, and lettering are familiar : our statues of soldiers on horseback are very like those on Roman tombstones ; we show our medals and they showed theirs ; and we still use the letters of their inscriptions. The dedication to a prefect “ begotten in Mauretanian soil, buried in foreign earth ” ¹ has a similar ring to Macaulay’s epitaph on the Jacobite who “ languished in a foreign clime ” and “ pined by Arno for ” his “ lovelier Tees.” But a greater effort of imagination or some more specialized knowledge is needed to realize that the conventionally-portrayed figures and the hieroglyphic inscriptions on ancient Egyptian monuments represent and describe human beings who were once moved by feelings and ideas akin to our own. This similarity is clearly shown in their nomenclature and, to some extent, in their phrasology, as I hope to indicate in the following pages.

The foreign queens of Egypt were given Egyptian names : Princess Giovanna of Italy took the Bulgarian equivalent of her Italian name, Ioanna, on her marriage to the King of Bulgaria. Similarly, foreigners who settled in England anglicized their names ; Sainliens, a Huguenot refugee, who taught French for a livelihood in Elizabethan London, found Hollyband a more pronounceable name,² and Maximilian Poictrin, a sculptor from Utrecht, who became master-carver to King James I and carved the tombs of Queen Elizabeth and the infant princesses in Henry VII’s Chapel in Westminster Abbey, was known as Maximilian Colt.³

In ancient Egypt, orphans carried off in raids were given such unsympathetic names as “ Not known and not asked for,” “ Not known of them,” “ Not known and not established.” ⁴ Our XVIth-century parish records show that we overcame the difficulty in a more humane way by calling foundlings after the part of the parish in which they were rescued : “ William Longlane,” “ William Ducklane,” “ Bartholomew Close,” or by giving them encouraging names such as Thomas Fortune and Mabel Luck.⁵ Simon Trouvé was a French foundling.

A child was named after his paternal grandfather in Egypt,⁶ even as our children are to-day, and the same feelings seem to underly the custom of naming children after a dead relative in both countries and epochs. In ancient Egypt may be noted Senu-onkh, “ The brothers live ” ; Atef-onkh, “ His father lives ” ; Sennu-onkh, “ The second lives ” ; and Khnedu-onkh, “ May the children live ”. The parish registers of St. Bartholomew’s, Smithfield, record three sons of John and Judith Millett, who were all called John : two died in 1631 and 1636 respectively, and the third was

baptized in 1645. Sir Christopher Wren had an elder brother, also a Christopher, who died in infancy a year before the architect's birth.⁷ Sir John Wingfield (died 1481) gave his baptismal name to two sons, and called two daughters Elizabeth. It is possible that the elder Elizabeth had been marked out for the vocation of a nun before the younger was born, as nine other children came between; but both Johns are mentioned in a Commission as "John Wyngfeld . . . the elder, esquire, and John Wyngfeld . . . the younger, gentleman."⁸

The giving of royal names in ancient Egypt can often be used in dating.⁹ This custom is traceable throughout the ages, and we are able to date generations by names such as Alexandra, Elizabeth, Albert, or Diamond.

Theophorous names form the largest section of personal names in Egypt, though they are not always recognizable as such at first sight. In fact, the popularity of certain gods' names at certain periods is an index to the rise of their cult. "Given of Sebek,"  and Dorothea and Theodora are close parallels; and  stands for   even as Dolly is an abbreviation of the English "Gift of God." In many Egyptian names, the name of the divinity was omitted or figured in the form of a pet name. Many similarities are to be found under this heading. In those cases where the Egyptians placed the full name and the abbreviation side by side, it is possible to trace a pet-name to its source. For instance, an inscription at Vienna names a woman          Lady of the Sycamore called Anauhat, and thus explains the N.K. name Ananhāi (*B.M.* 141, 146, 167), and variants with a tree sign.¹¹

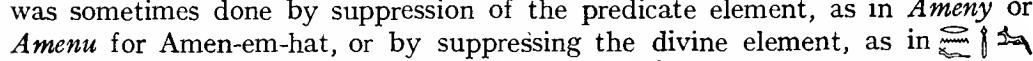
Many personal names that are apparently names of animals¹² are, in reality, abbreviations of theophorous names, such as Mād-em-hequ, "The lion among princes", etc. The names of several animals, however, seem to be used as personal names without any reference to a divinity. Of these, some have been traced in the oldest period only, *e.g.*, Hippopotamus, Crocodile, Swallow, Scorpion, Dove, Tadpole, whereas others, such as Frog and Dog, do not appear before the New Kingdom. Somewhat curiously, Cat and Mouse are the only animal names that occur at all times. It is probable that various reasons lay behind the giving of such names: a child called Crocodile might perhaps escape a horrible fate if it fell into the river. Probably these names were merely pet-names in the first instance, and it is perhaps significant that in the earliest certain example of the use of an animal's name, Hethes, as a personal name,¹³ it is expressly stated to be the "little name" of a noble whose "big name" was Kho-bāu-seker. It is interesting to note in this connection that St. Columba, who was born in Donegal in the year 521 A.D., received at baptism the name of Crimthann ("Fox"), which was a common personal name in those days in Ireland, but while he was still a child he was given another name, Columba ("Dove"), because of the simplicity of his nature; this name replaced his baptismal name and became his name in religion.¹⁴

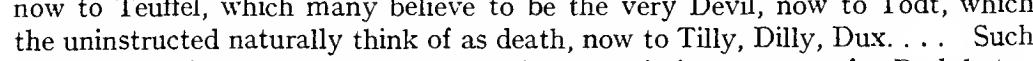
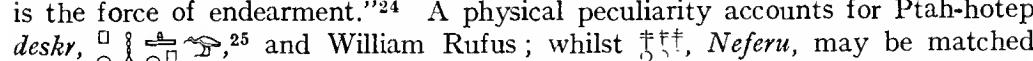
Nicknames from animals are common in English too, and here the metaphor is usually fairly obvious. Though modern women would probably object to being called Hippo or Crocodile, yet "shrew" was used for both sexes up to Shakespeare's day and was a libel on a harmless little creature, the shrew-mouse.¹⁵ "Puss" and "Mouse" are terms of endearment in English also, and so is "Pigeon" in Ireland.¹⁶

The derivative Pussy is closely related in construction to forms such as *Unshesh*, from *Unsh*, wolf, by duplication of the final consonant, which was

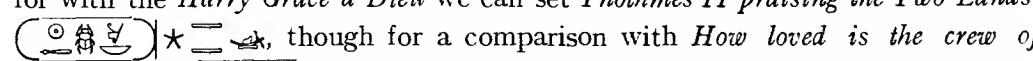
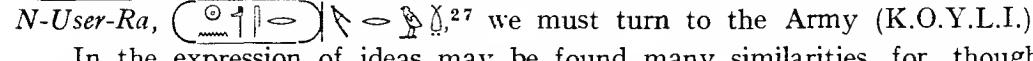
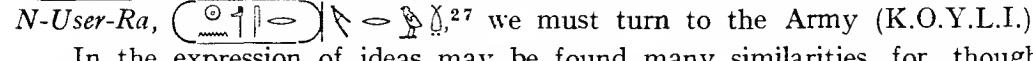
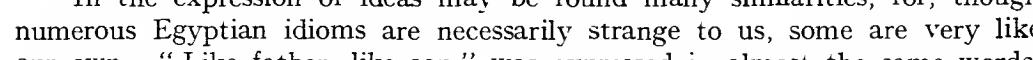
common with M.K. names, e.g., *Uāzez* from *Uāz*, *Nefrer* from *nefer*, *Senbeb* from *seneb*, etc.¹⁷ And, curiously enough, the Horus name of a Pharaoh finds an exact parallel in the title *Dauphin*, which commemorates the absorption into the French monarchy in 1349 of the lordship of *Dauphiné*, the cognizance of which was three dolphins.¹⁸

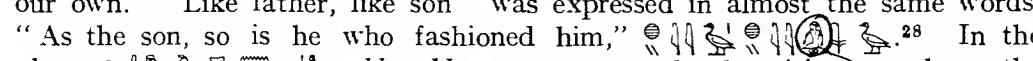
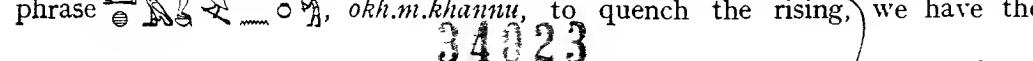
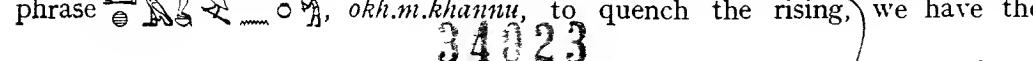
Turning a name into a pet-name does not always save breath, and playfulness and affection have their share in the process. It must have been genuine affection that led to *Amen-em-hat II* being called "Amenu" (and probably *Ameny*),¹⁹ and this prince may join the goodly fellowship of bluff King Hal, good Queen Bess, and Prince Eddy.

Unless *Sety* be a similar abbreviation to *Ameny*,²⁰ the only other instance in ancient Egypt of a royal nickname is *Sessu* for *Rameses II*, though it is not surprising to find that long theophorous names were frequently shortened in the case of less exalted persons. Turning a "big name" into a "pretty name" was sometimes done by suppression of the predicate element, as in *Ameny* or *Amenu* for *Amen-em-hat*, or by suppressing the divine element, as in  (O.K.) and  (N.K.).²¹ The last two examples illustrate the different terms for nickname in the O.K. and N.K. respectively.

Though long phrase-names in English, theophorous or otherwise, now bear a Puritan hall-mark, it should be remembered that *Ronald*, *Reginald*, and *Reynard the Fox* are all forms of the Saxon *Reginhart*, meaning Strong in Counsel.²² This is but one example of the many old Teutonic names that no longer suggest their original meaning at first sight, and it is interesting to trace the same processes of abbreviation and endearment at work as in Egyptian. In modern German, "Arnald may now be Noll or Nolle, or Nölken or Noltze, or, when the other half has been kept, Arndt and Ahrens; while the derivatives, rushing in from many quarters and dialects, have led to the strangest variations. Take the fruitful root *Theudo* (which lives in England in Thetford); it leads now to *Teuffel*, which many believe to be the very Devil, now to *Todt*, which the uninstructed naturally think of as death, now to *Tilly*, *Dilly*, *Dux*. . . . Such is the force of endearment."²³ A physical peculiarity accounts for *Ptah-hotep* *deskr*, , and *William Rufus*; whilst  *Neferu*, may be matched with *Mabel*, *Grace*, and *Bella*, or *Meryt-ata* with *Désirée*. The same tribute to courage is expressed in *Heqa-Yeb* and *Coeur-de-Lion*.²⁴

Punning on names has ever been a tempting exercise: Pope Gregory made a whole series of puns on the nationality, province, and ruler of the slaves from Britain; Lord Birkenhead's motto is *Faber meae fortunae*. The custom was known in Egypt, for on the stela of one *Heqa-Yeb* his name is used as an epithet: "I was *heqa-yeb* (i.e., one mastering his heart) in going forth in dangerous situations while everybody else was shutting his door."²⁵

Like ourselves, the ancient Egyptians called their ships after their kings, for with the *Harry Grâce à Dieu* we can set *Thothmes II* *praising the Two Lands*,  How loved is the crew of N-User-Ra,  

In the expression of ideas may be found many similarities, for, though numerous Egyptian idioms are necessarily strange to us, some are very like our own. "Like father, like son" was expressed in almost the same words, "As the son, so is he who fashioned him,"   .²⁶ In the phrase  *okh.m.khannu*, to quench the rising, we have the

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? Is this correct
Please

image of fire as in English. "My heart's in the Highlands, my heart is not here," and, using similar language, Sanehat begged to be allowed to return to his own country where his heart sojourned.²⁹ Pharaoh is called "the good shepherd," , and the verb *minu*, to herd, is derived from , a mooring post, from the herdsman's habit of tethering grazing cattle.³⁰ This custom still holds in Egypt and it is also common in Westphalia, where fences and walls between houses and fields are not often seen. (In parenthesis, one notices several curious parallels between Egyptian and German *Kultur*, or "civility," as Stow would have said: the term for the women's quarters is used for the occupants themselves both in *ap.t.*, , and *Frauenzimmer*; and a title of Egyptian queens, "What she says is done", seems to find an echo in the German saying, "I am the master in my house, what my wife says is done").

As the jackal is the god of cemeteries, it is tempting to trace a similar idea to that expressed in "God's acre" in the picture of a jackal placed above the word-sign for field, which occurs on boxes for canopic jars, particularly as the jackal is so often used in sportive hieroglyphs. For in this form of writing the jackal may replace walking legs (as in the name *Im.hotep*), whilst three jackals' skins in the word-sign for *mes* may be replaced by three whole jackals. The playful spirit outlived hieroglyphs, as we may see in so many canting heraldic shields (e.g., a bull for a man called Bull, shells for Shelley, and so on); in rebuses such as a barrel pierced by a bolt for Prior Bolton's name, and in some representations of incidents of the Passion.³¹ Standing upon an enemy³² was a motive that was widely used for showing victory in ancient art: Horus stands on crocodiles; Roman emperors were portrayed on their coins riding down various animals that represented the foe; a vanquished dragon stood for heathendom in the iconography of several saints (as St. George, St. Michael, and St. Margaret), and this creature became the symbol of martyrs who took the faith to new countries.³³

L. B. ELLIS.

REFERENCES.

1. Bonner Jahrbücher, 129, 1924.
2. *The Elizabethan Home*. Discovered in Two Dialogues by Claudius Hollyband and Peter Erondell. Edited by M. St. Clare Byrne.
3. E. A. Webb, *Records of St. Bartholomew's Priory*, 1921.
4. Petrie, *A.E.*, 1925, iv, p. 106-7.
5. E. A. Webb, *op. cit.*
6. Gardiner and Sethe, *Egyptian Letters to the Dead*, p. 1: "The identity of the orphan son Iy is confirmed by the name of another Iy, called 'Iy the elder,' in line 3, and 'thy father Iy' in line 9, for it is quite in accordance with Egyptian custom that a child should be named after his paternal grandfather."
7. See the reproduction in facsimile, with explanatory footnote, in C. Whitaker-Wilson's *Sir Christopher Wren*, of an interleaf in a book once in the possession of Dean Wren, the architect's father, upon which Dean Wren had recorded particulars of the births and deaths of his children.
8. J. M. Wingfield, *Some Records of the Wingfield Family*, whence also (p. 22): "It was not till some years later that a second baptismal name was ever given. One grandson of Sir John . . . received the double name of Edward Maria in about 1516, but William Camden in his *Remaines*, published about

1605, mentions this case as one of the earliest instances of an Englishman having a second baptismal name."

9. *Ancient Egypt*, 1924, p. 76. But names like " (King) N.N. lives" were handed down from father to son (see Junker, *Die Stele des Hofarztes Irj* in *Zeitschrift* 63, 1927, p. 56 ff.). This was particularly so in the case of chantry priests (H. Balcz, *Zur Datierung der Mastaba des Snofru-ini-štef* in *Dahsūr* in *Zeitschrift* 67, 1931, p. 10).

10. *Mar. Mast.* D.65.

11. Erman, *Zur Schreibung der Personennamen* in *Zeitschrift* 44, p. 107.

12. H. Ranke, *Tiernamen als Personennamen bei den Aegyptern*, in *Zeitschr.* 60, 1925, p. 76, f.

13. *Saqq. Mast.* I, pl. 1, Dyn. III.

14. John A. Duke, *The Columban Church*.

15. Weekley, *Romance of Words*.

16. "I kiss you, I kiss you, my pigeon, my own; Ah, how I shall miss you when you have grown." (W. B. Yeats, *Cradle-Song*.)

17. Ranke, *op. cit.*

18. Weekley, *op. cit.*

19. Petrie, *History*, vol. 1, 10th ed., 1923, p. 172.

20. Sethe, *Kurznamen auf j* in *Zeitschr.* 57.

21. Sethe, *ibid.*

22. Sethe, *Ueber einige Kurznamen des neuen Reichs* in *Zcitschr.* 44.

23. Weekley, *op. cit.*

24. *Times Lit. Supp.*, 30th Sept., 1926, p. 646, review of Cascorbi, *Die deutschen Familiennamen*.

25. Saqq. Mast. Pl. VI.

26. B.M. Sculpture 1671. See *J.E.A.*, XVI, 1930, pp. 194-9, *The Stela of Heqa-Yeb*.

27. *Sahura* II.

28. *J.E.A.*, III, 1916, p. 243.

29. Spiegelberg, *Das Herz als zweites Wesen des Menschen*, in *Zeitschrift* 66, I, 1930, p. 36, note 5.

30. A. H. Gardiner, *The Egyptian word for "herdsman," etc.*, in *Zeitschrift* 42, 1905, pp. 116-23.

31. Some incidents or emblems of the Passion were frequently represented by ideograms, e.g., a cock crowing showed Peter's denial of Christ, an ear attached to a sword stood for his cutting off the ear of Malchus, and water pouring from a jug over two hands represented Pilate washing his hands. (The last emblem is very suggestive of the *uab* sign.) For these and other ideograms see *inter alia* the *Sforza Book of Hours*, f. 167, and bosses in Winchester Cathedral.

32. The same motive was used on the memorial slab to Thomas Mowbray, Duke of Norfolk, who died in exile in 1399. On this slab the Mowbray lion is standing upon the King's helmet, which is covering the head of the Bolingbroke swan; the meaning being that Mowbray would have destroyed Bolingbroke but for King Richard's intervention and protection. (Lord Howard of Penrith, *The Finding of the Mowbray Stone*, in *Cornhill*, March, 1933.)

33. Mâle, *L'art religieux . . . XIII^e siècle*.

JOURNALS.

ART AND ARCHAEOLOGY.

FIELD, H.—*Field Museum—Oxford University Expedition. Kish, I.*—Besides a statement of the course of excavation there are some useful photographs, a dagger with open-work handle, the circular mirrors of the oldest age, two chariot groups with knobs round the edge of the wheels for transit over sand, and a deer as a rein-ring standard.

KARNAGHAN, A. W.—*A Painter of Ancient Masterpieces.*—These paintings, excellent in technique, yet show how difficult it is for a modern mind quite to take an ancient frame. There is a modernity of expression in most of the faces sufficient to condemn such a sculpture as being a forgery. The better an artist is in training, the less he is able to subdue himself to show imitation. This is unfortunate if his work is held up as giving the true spirit of the original.

ORIENTAL INSTITUTE, CHICAGO.

EDGERTON, W. F.—*Notes on Egyptian Marriage.* 26 pp. 1931.—This is a discussion on the marriage laws of Egypt, particularly in the Ptolemaic period. The author's conclusions are that "in native Egyptian law, marriage was a private contract. There is no evidence that any civil or religious official participated. No written document was required. The marriage continued during mutual consent; either party could dissolve it at will, and we have no evidence that the law attached any penalty to divorce. Marriage could also be limited in advance to a definite period."

M. A. M.

NATIONAL ACADEMY OF SCIENCES. XVII. No. 12.

MACCURDY, G. G.—*The Use of Rock Crystal by Palaeolithic Man.* 4 pp. 1931.—This is a short account of the rock-crystal implements of the palaeolithic period in France. They date from Mousterian to Magdalenian, and are found in three adjoining departments in central France: Charente, Dordogne, and Corrèze. The source of the crystal is probably in the region of eruptive rock near the headwaters of the Vézère.

M. A. M.

SMITHSONIAN REPORT, 1930.

HOUGH, WALTER.—*Ancient Seating Furniture in the Collections of the United States National Museum.* 8 pp. 24 pls. 1930.—This paper is concerned almost entirely with stools as the most primitive form of "detached seating furniture." The beautiful illustrations give examples of American and African stools, with a few reproductions, from sculpture and painting, of stools and chairs in Mesopotamia and Greece. Though "it is very likely that Egypt must be looked to for the first great development of joinery," Egyptian stools and chairs are not illustrated. There is no attempt at giving a chronological basis to the paper.

M. A. M.

JOURNAL OF BIBLICAL LITERATURE. L. II. 1931.

BADÈ, W. F.—*Ceramics and History in Palestine.*—This is Dr. Badè's presidential address to the Society of Biblical Literature and Exegesis in New York. As such it is necessarily very general in content. He deals entirely with the importance of the study of pottery in archaeology, and points out that in all countries pottery is the basis for dating purposes. At the end he gives the details of the system followed by American excavators in recording objects

found in a site, a system so detailed that it can only have originated in Germany or America, where essential facts are often obliterated by masses of unnecessary minutiae. He indicates an interesting study of the finger-prints of the ancient potters, and the method of recording them.

M. A. M.

KRAEMER, C. J., Jr.—*A Greek Element in Egyptian Dancing*. 14 pp. American Journal of Archaeology. Second Series. Vol. XXXV. No. 2. 1931. —This is an explanation of the contracts between professional dancers and their customers which are not uncommon in Roman Egypt. Dr. Kraemer points out that the *crotalistria*, or castanet dancer, was a Greek institution, but that the professional dancer—either *première danseuse* or a troupe—were known in Egypt from the Vth dynasty onwards. He cites various instances, but has omitted to note the fact that men's dances, with or without clappers, are slow and stately, while the girls' dances are full of energy and activity.

M. A. M.

MAN, June, 1932.

CATON-THOMPSON, G.—*Khargeh Oasis*.—The finding of accumulated tufa deposits, from springs now extinct, has produced an important series of flint implements from Acheulian to Neolithic times. There are also three periods of gravels, of the plateau, the terrace, and the wady. It is concluded that no lake has been formed in this oasis. No trace of historic work appears before the XXVIIth dynasty. After Cairo Museum had received all that it needed, the collection was still lying in Egypt two months later awaiting Governmental permission to leave!! Egypt succeeds in discouraging scientific work. Meanwhile the plundering of sites by natives is rife.

RODD, F.—A photograph of trilithons in Ahaggar is given in a brief paper.

ZEITSCHRIFT FÜR AEGYPTISCHE SPRACHE. LXVII. 1931.

This volume is dedicated to Steindorff in honour of his seventieth birthday, with an appreciative foreword by Erman.

ANTHES, RUDOLF.—*Der Wesier Paser als Hoherpriester des Amon in Hermonthis*.—In this article the vizier Paser is considered to have been high priest of Amon at Hermonthis on the evidence of a mutilated inscription accompanying the figure on the right (north) side of the entrance door to his tomb at Thebes (Gardiner and Weigall, *Top. Cat.* 106, period Seti I-Rameses II). The figure is taken to represent Paser himself, though he is not dressed as a vizier and though the titles in the inscription (*wr m³ w* of Thebes and high priest of Amonrasonther) do not occur elsewhere in his titularies, or not with certainty. There is, however, a fragment of a stela in the Vatican containing the name of vizier Paser, high priest of Hermonthis, and the writer concludes that this passage refers to Paser himself, not to his father *Nb-ntrw*, who held this office; he concludes further that the title "high priest of Amonrasonther" refers to this office. There is, he holds, no reason for thinking that either father or son was high priest of Karnak, as has been held hitherto. Another title of Paser, found elsewhere, is Superintendent of all the gods of Upper and Lower Egypt. This high administrative post was held with occasional exceptions by the high priests of Karnak until the reign of Amenhotep III, and it returned to them in the latter part of the reign of Rameses II.

BALCZ, HEINRICH.—*Zur Datierung der Mastaba des Snofru-ini-ištef in Dahšûr*.—A series of O.K. mastabas which were excavated by de Morgan between the pyramids of Senusert III and Amenemhat II, and dated by him to the IVth

dynasty, are ascribed by the writer to the VIth dynasty. The wall paintings in the mastaba of Snofru-*ini-Isfet* are decisive in this later dating. These paintings are noteworthy in the history of Egyptian art and yield the earliest example of the combination in one picture of fish-harpooning and bird-catching.

v. BISSING, F. W.—*Osiris im Boot*.—This stela was found at Mitrahineh and is now at The Hague. It is without inscription, but by analogy the scene must represent the voyage by boat of Osiris after death. The stela belongs most probably to the fourth or third century.

BONNET, HANS.—*Die Bedeutung der Räucherungen im ägyptischen Kult*.—The use of incense was not based solely on its cleansing nature ; it worked on the senses. Further, incense was regarded as the odour of the gods or as divine sweat ; it was connected with Horus as “*mnw*er, that is in the limbs of Horus” (Pyr. 116). Being the odour of the gods, incense was a symbol and guarantee of life, and besides conferring eternal powers it carried the dead to the gods and the celestial realms. After the O.K. the censing texts are influenced by the Osiris religion ; incense was no longer divine sweat, but the “*imsh* (marrow ?) that came forth from the backbone of Osiris.” Though the ritual was influenced by Osiris symbolism, its basic thoughts were too deeply rooted in ideas that were common stock for any definite cult to master it completely, so that the Osirian and solar sections are but incursions in which the general development of Egyptian religion are reflected.

BORCHARDT, LUDWIG.—*Die Königin bei einer feierlichen Staatshandlung Ramses II*.—In a picture in the tomb of Neb-wenen-f at Dra Abu el-negga (No. 157), in which Rameses II is making the owner of the tomb first priest of Amon, the king is accompanied by the queen in an affectionate attitude. It has been supposed hitherto that such scenes were reserved for the art of Tell el-Amarna.

EVERS, HANS GERHARD.—*Zum Nachleben der ägyptischen Löwen-Gestaltung*.—The influence of the Egyptian lion may be traced in Greek and Roman art. Only one mediæval school of sculpture shows acquaintance with the Egyptian style, that of the Roman *marmorari* of the twelfth and thirteenth centuries, and, above all, the workshop of Vassalletto. Some of the examples quoted are derived from Roman versions of Egyptian models, but others show direct Egyptian influence in the sideways position of the head ; both types may occur on the same monument.

GRAPOW, HERMANN.—*Die Welt vor der Schöpfung*. (Ein Beitrag zur Religionsgeschichte).—The only complete account of the Egyptian myth of the Creation is in the “Book of the Destruction of Apophis.” Two sections in this compilation describe how the Sun God created first himself, then Shu and Tefnut, then the other gods and the rest of the world. Similar accounts of the “things that were not” (II Macc. 7, 28) occur in numerous Egyptian texts, and there are parallel accounts in Hebrew, Babylonian, Indian, Old German, and Old Nordic. These various descriptions are collected in this article, and are a striking proof of the spread and expression of ancient ideas throughout mankind.

HILZHEIMER, MAX.—*Die Nashorndarstellungen von Kerma*.—The rhinoceros in bone found by Reisner at Kerma is clearly a white rhinoceros, and so is probably the “rhinoceros in raw hide” also. Its accurate representation shows that the artists knew this animal well, and that it must, therefore, have been

found in the neighbourhood at this period (M.K.), though its distribution is different now.

HÖLSCHER, Uvo.—*Erscheinungsfenster und Erscheinungsbalkon im königlichen Palast*.—The state windows or balconies from which the King rewarded his courtiers that are depicted on the walls of tombs at Thebes and Amarna are here shown to be the same structures that have been preserved or can be restored in the palace of Rameses III at Medinet Habu.

JUNKER, HERMANN.—*Ein Doppelhymnus aus Kom Ombo*.—The late inscription dealt with in this article consists of a hymn to Suchos and of one to Haroeris ; it is noteworthy for its syncretism.

KEES, HERMANN.—*Die Befriedung des Raubtiers*.—There is observable in the classical period of Egyptian sculpture a marked modification in the original conception of lions as beasts of prey : lions' heads with closed jowls were used for decorating gutters on the roofs of O.K. temples. This idea of their appeasement also finds expression in religious texts and in the myths of lion goddesses : the lion sign in the name of the Thinite goddess *Mhy.t* wears a collar, and the term  (mildness) is applied to Sekhmet.

KLEBS, LUISE.—*Die verschiedenen Formen des Sistrums*.—There are three kinds of sistrum : (1) the naos sistrum (known in the O.K.), which is not a musical instrument ; (2) the frame sistrum (M.K. only) ; and (3) the hoop sistrum (N.K.), both of which contain a rattle. The rattle of the hoop sistrum generally consists of three pieces formed like the snake from which the hieroglyph  is derived.

LITTMANN, ENNO.—*Bemerkungen zur ägyptisch-semitischen Sprachvergleichung*.—There can no longer be any doubt that the old Egyptian language is a disintegrated Semitic language. The grammatical constructions alone were proof enough, and a comparison of words is confirmatory.

MEYER, ERNST.—*Zur Geschichte der 30. Dynastie*.—The old identification of Nectanebes (I) with *Nht-nb-f* and of Nectanebos (II) with *Nht-Hr-hb-t* is correct. A gold coin of Tachos in the B.M. is of interest in connection with the measures taken by this king to raise funds, as it shows that this issue was for paying the Greek mercenaries.

PIEPER, MAX.—*Zum Setna-Roman*.—Of late this tale has been regarded as a proof of Egyptian and Greek syncretism. Though two motives in it show borrowing from the Greek, the main characters and ideas could all be derived from earlier Egyptian literature. The tale is a forerunner of the story of Faustus and it is, therefore, most desirable that the Heidelberg texts in Coptic dealing with the magician Cyprian should be published.

POLOTSKY, HANS JAKOB.—*Zur koptischen Lautlehre I*.—The vowel of a syllable that has become the end of a word through the loss of the final consonant becomes -ε in Sah. Achm, and Subachm., but in Boh. and Fay. it becomes -ξ. The exceptions to this rule are explained.

RANKE, HERMANN.—*Das Grab eines Chefs der Zentralverwaltung Ägyptens unter Haremheb (?)*.—Five scattered monuments with the name and titles of a high dignitary  *imn-m-in(t)* may be regarded as coming from the same tomb at Memphis. Horemheb is indicated as the Pharaoh.

ROEDER, GÜNTHER.—*Der Urzeit-Bezirk und die Urgottheiten von Hermopolis.*—A summary of our knowledge of the religious teaching at Hermopolis on the rise of light and life and of the localities in which the cult of the primeval gods was practised, arrived at from literary sources and from the work of the German Hermopolis Expedition.

RUSCH, ADOLF.—*Doppelversionen in der Überlieferung des Osirismythus in den Pyramidentexten.*—The parallel versions of the Osiris myth in the Pyramid Texts are due to the change in the conception of the god (from a dead to a risen god) and to the inclusion of Horus.

SCHÄFER, HEINRICH.—*Die kupferne Zielscheibe in der Sphinxinschrift Thuthmosis des IV.*—The expression  in line 5–6 of the great inscription of Thotmes IV on the Sphinx at Giza refers to the target and means “of copper.” The meaning of *śwtet* varies according to context.

SCHARFF, ALEXANDER.—*Über einige fremdartige Darstellungen auf Siegelbildern aus dem späten Alten Reich und der ersten Zwischenzeit.*—A recently acquired button seal in the Berlin Museum (Inv. No. 23371) shows a monogram-like arrangement of signs, the horns of the central Hathor head being used as the fore-parts of opposed lions. A similar arrangement occurs in several other instances, including three cylinder seals and a button seal in Petrie, *Buttons*, Pl. 2, No. 129. This monogram arrangement was the Egyptian method of dealing with a foreign influence, which first showed itself in an asymmetrical arrangement of individual signs. The impulse for this foreign style must have come to Egypt from outside in close connection with the introduction of button seals; the period must have been shortly before or during the reign of Pepi I and the locality must have been the Delta.

SCHMIDT, CARL.—*Ein koptischer Werkvertrag.*—This ostracon concerns the hiring of one Leon as a labourer for a year by the “holy monastery of Apa Mena on the rocks”.

SCHOTT, SIEGFRIED.—*Ein Amulett gegen den bösen Blick.*—A tablet of wood in the Berlin State Museum, inscribed on both sides with a spell against the evil eye.

SCHUBART, W.—*Orakelfragen.*—An attempt to reconstruct the workings of the oracle in Egypt in reply to questions addressed to it in Greek, of which many examples are known. These are written on small strips of papyrus. In one case two identical strips are known, and this was presumably the rule, one copy being kept in the temple archives. It is assumed that the strips were placed in an urn, which was sealed.

SETHE, KURT.—*Die Türteile bns und 'ry.t. Zu Totb. Nav. 125 Schlussrede 28–34.*—In Chap. 125 of the Book of the Dead certain parts of the doors through which the deceased passed to the Judgment Hall were named after parts of the Balance. These parts are described as the *bns* and the *'ry.t.* In the older version of the XVIIIth dynasty they may be identified as the lintel and the jambs respectively, but in the course of time a change is noticeable which is expressed in certain modifications of the text.

d TILL, W.—*Zur Bedeutung der negativen n-form.*—The writer would extend Gardiner's definition of *n śgm.n.f* (*Grammar* § 418) as follows: not only the occurrence but also the possibility of the occurrence of an action is denied.

WIEDEMANN, ALFRED.—*Neuzeitliche Fälscherkünste*.—Four of the modern fakes exposed in this article were received from Pierre Bouriant. Another is a big scarab at Toronto, also showing a French hand, e.g., *hm-(t)-s* for “his wife”, i.e., *sa femme*. It seems likely to the writer that the scarab published by Shorter in *J. E. A.* XVII, pp. 23 ff., is from the same source.

WILKE, CARL.—*Ein Regenzauber in den Pyramidentexten?*—The writer would translate Pyr. 236c thus: “Be thou washed, O desert. (Let) water (be there)! Dust shall not be there.” This would then be a spell for rain.

WOLF, WALTHER.—*Bemerkungen zur frühgeschichtlichen Ziegelarchitektur*.—The L.E. origin of niche architecture (see Balcz on “Die ägyptische Wandgliederung” in *Mitteilungen des Deutschen Instituts für ägyptische Altertumskunde in Kairo*, Vol. 1) confirms Petrie’s surmise that the “Tomb of Menes” at Naqada belonged to Queen Neithotep. It also disposes of the theory of the evolution of the O.K. mastaba from the N.W. African dolmen. Whereas L.E. brick architecture of the early times shows a strong affinity with that of Saqqara in rhythmical arrangement of surface, U.E. brick architecture is allied to stone architecture of the IVth dynasty in its plainness of surface. The style of the IVth dynasty is a return to older U.E. ideas and signifies the final triumph of the South over the North.

WRESZINSKI, WALTER.—*Die Statue eines hohen Verwaltungsbeamten*.—This statue is in the Courland Provincial Museum at Mitau. The kneeling figure supports a stela placed obliquely so that the Sun God may read the prayer inscribed on it at his rising.

ZYHLARZ, ERNST.—*Die ägyptisch-hamitische Dekade*.—The following conclusions are reached on Egyptian numerals: Numbers 1 and 2 are Hamito-Semitic and are of very ancient relationship; 3 and 4 are Hamite; 5 is Hamite in use, but Hamito-Semitic etymologically; 6-9 are not Hamite, they are homogeneous with the corresponding Semitic numbers; 10 is Hamite. The oldest method of Egyptian counting was in fives, with the hand as a higher unit than one finger; this is still the native method in Libyan N. Africa and S.E. thereof. At a time when the root ‘asar did not yet mean 10, but still meant an indefinite quantity, the prehistoric Egyptian language had already gone over to counting by tens, supplementing the old “five”-unit system with expressions from the same trade district in which the decimal Semitic numerals developed. This individual system was already in full force when the Egyptian language passed from a spoken to a written language.

L. B. E.

REVIEWS.

EURASIA SEPTENTRIONALIS ANTIQUA. VII, 1932.

This very important journal published at Helsingfors, edited by Prof. Tallgren, is not sufficiently familiar to English readers. This number opens with a finely illustrated article on the early Iron Age in Russia by the editor. A study follows of portions of bows from Carnuntum—the old camp of Marcus Aurelius. Excavations at Kharkow, 300 miles north of the Crimea, yield gold ornaments, triangular Scythian arrow heads, and flat arrow heads with side-tang. Discoveries west of Tiflis in the Caucasus include fine bronze socketted axes and daggers with the ribbing, described as slightly raised symmetric ribs, of the same character as on the ribbed daggers of the first palace period at Gaza; also wheel-shaped cheek pieces to horse bits.

A paper on prehistoric Caucasus, by Prof. Hanchar, has figures of the "sun-flower" curved hair pins, also found at Gaza. The toggle pins are well illustrated, with ringed, spiral, and criss-cross patterns; a map shows the distribution of these to be entirely on the Caspian slopes of the Caucasus. As these types are all known in the first palace and that of the Hyksos at Gaza, they are strong evidence of the source of those invaders.

A report on archaeological work in Russia, by an Estonian student, states that all correspondence with foreign archaeologists is forbidden; communications can only be made through the Central Academy, classified according to political sense, and the Academy is the only avenue for archaeological connections. Both in Leningrad and Moscow collections are to be arranged by political types of government. Prof. Tallgren in Finland is doing a great service by maintaining a free port for discovery and research.

The paper by Prof. Avdief in this number deals with later connections of the Caucasus, but it is much to be hoped that the early Copper Age civilization will be explored, for its relation to the south.

ORIENTAL INSTITUTE, CHICAGO.

XIII. *Tell Asmar and Khafaje*. By H. FRANKFORT, T. JACOBSEN, and C. PREUSSER. 8vo, 112 pp. 1932. \$1.5.

This site is 50 miles N.E. of Baghdad. It was carefully handled by Dr. Frankfort, following the lines of building and avoiding destructive trenching. At the surface it is of the age of Hammurabi, and below extends to more than three centuries earlier. The names of 19 rulers were recovered, and record of three rebuildings of the palace. Beyond pottery figures of deities and a cylinder, no small objects are published.

Khafaje is a fortified town about 600 feet long, with double walls; the interior is not yet examined. Figures are given of heads from statuettes of alabaster and pottery, and one of shell, all of Sumerian type; a narrow copper axe, and a dagger, as well as a stone macehead with two lions, couchant, on it. There were no name inscriptions.

XIV. *Discoveries in Anatolia*. By H. H. VON DER OSTEN, R. A. MARTIN, and J. A. MORRISON. 8vo, 149 pp. 1933. \$2.0.

This is mainly concerned with Alishar, about 130 miles N. of Aleppo. Some areas were cleared from the Roman down to the Neolithic level. This bore the earliest pottery, with squares and crosses incised. There is estimated to be

yet 35 feet more down to virgin soil. In the Hittite layer seals were found, and pottery rhytons. Later, there is a fine socketted bronze chisel, an early instance. Tablets were found left by traders from Iraq, as at Kul Tepe. Such a long range makes this site of great value if everything found is levelled and published.

Gâvur-Kalesi is about 35 miles S.S.W. of Ankara. Hittite rock carving and iron tools show the periods. Pottery whorls and sherds are probably early Phrygian.

Survey and exploration by J. A. Morrison is a satisfactory record of good relations with the peasantry, and careful observation and surveying. A great square reservoir of Hittite time was found about 70 miles E. of Kaisarieh, with a short well-cut inscription. This is headed by a disc of 13 radii (lunar months?) and widely spread wings. Eleven large signs below, with three symmetrically repeated, are a promising group. A fine Hittite stele with figures is given in photograph and drawing, from Sivas museum. A row of Hittite slabs was found in a wall.

XV. *Excavations at Ancient Thebes*. By I. HÖLSCHER. 8vo, 65 pp. 1932. (Cambridge University Press.) 5s. 6d.

This describes details of Medinet Habu, the lay-out of the whole plan, and the quay in front of the temple. The small palace at the south of the first court has been carefully studied, and is compared with that of Ramessu II at the Ramesseum. The inflection of the temenos at the N.W. corner led to the discovery of the temple of Ay and Haramheb. An ostrakon here which gave the date of year 27, pachon 9, the day of entering in of Haramheb, is doubtless dated from the 1st of Akhenaten, and may refer to the accession of Haramheb, as there were at least 27 years in the time of the three kings before him. A colossus of Tut-onkh-amen, never erected, was also found.

At the Ramesseum some further excavation was done in search of early details. Along the north wall of the temple was an earlier temple of Sety I; and regard for this seems to have deflected the direction of the Ramesseum so that it is askew to the great temenos wall around the brick store rooms.

In connection with the XVIIIth dynasty temple of Amen, in the forecourt of Medinet Habu there was found the tomb of king Har-sa-ast (832-826 B.C.) with his sarcophagus, stolen from the tomb of Hentmara, daughter of Ramessu II. A summary of the whole study, in German, with 29 plates, is issued as *Medinet Hebu*, by Uvo Hölscher, by Hinrichs, Leipzig, at 5.40 marks.

XVI. *Archaeology and the Sumerian Problem*. By H. FRANKFORT. 8vo, 72 pp., 6 pls. 1932. \$1.0.

This is an important review of the material of the age before Sargon. A map shows the regions of the three chalcolithic civilizations—Anatolian-Caspian, Syrian, and Iranian. The conclusion is that four cultures passed between the first occupation and the rise of the dynasty of Akkad (Sargon), the end of Sumerian culture.

The latest is of the *Early dynastic age*, stated as 2900-2500 B.C.=VII-XIth dynasties by objects found; the age of the great royal tombs of Ur. At Kish there was a mixed people, round head at first and long head later, or Armenoid and Mediterranean types.

Earlier is *Jemdet Nasr* near Kish. The pottery is like that at Susa with proto-Elamite tablets; animal-shaped vases are common; the strange "Blau" engravings also belong here. Seal designs have animals in rows, especially goats.

The rows of animals, and animal vases accord with the 1st dynasty. Before that is the *Uruk period*. Here small, oblong bricks were in use, preceding the plano-convex. The pottery of this age is found widely in Iraq. Pictographic tablets begin, and both stamp seals and cylinders.

The first period is that of *El Ubaid*. The remains are found at each place on virgin soil, due to the first inhabitants who found the plain habitable. This age is before the "Flood" at Ur, having the uncanny female figures with peaked faces and skew eyes. Pear-shaped mace heads are found, which belong in Egypt to S.D. 40, but may be earlier here. This period overlies that of Susa I, so Elam was civilised before Iraq was settled. Copper tools were usual. The haft hole in hammers was probably only made in stone. Writing was unknown, but stamp seals were used. Decorated pottery appears. It is concluded that these people were Sumerians.

These first settlers came from the East, but probably before the Elamite language was there used. The style of culture belonged to the whole Iranian plateau, and a plate shows the similarities of nine designs in Susa-Persia and Baluchistan. The influence on Tell Halaf is noted. The boundary between Anatolian black and red ware and the Iranian painting lay along the Roman-Parthian frontier, between Lakes Van and Urumiyeh, and northward east of Caucasia and across north Persia. The jugs with long spouts are accepted as Anatolian, extending eastward into Persia.

The Sumerians were attributed to the second culture, that of Uruk. Unfortunately the physical evidence of type is by no means conclusive as yet. An illustrated table makes plain the resemblances of types of objects in Sumer compared with the same types in the Caucasus, Syria, and Central Europe. The geographic distribution of types excludes Sumer as "the centre of dispersion," and the Caucasian metallurgy is taken as the source. The Caucasus links with Gaza are thus re-enforced. The use of bronze there by 3100 B.C. agrees with the period here assumed.

Another appendix and table of forms shows the derivations from Anatolia, in Crete, Armenia, Persia, and Hittites, belonging to the Uruk period. A fourth appendix deals with the Susa and Baluchistan pottery.

This is a most valuable outline of the questions now agitating eastern archaeology, and the use of sketches grouped to show the spread of types is particularly helpful. The whole of it needs to be used, especially in fitting fresh material into position. It is thus the most systematic and helpful work of Dr. Frankfort.

The Great Pyramid in Fact and in Theory. By W. KINGSLAND. 125 pp., 37 pls. 1932. (Rider and Co.) 30s.

This book embodies the Petrie survey of 1882, and the Morton Edgar measurements of 1909-13. The latter are, however, partly theoretical, and stated to two or three places of decimals beyond the facts (p. 44). Unfortunately there is here a mixture—rather a muddle—of theoretic qualities and actual measurement. The only useful course is to state the measurements alone, shutting the eyes to all theories; and when the facts are thus settled, with recognized limits of uncertainty, theories may be constructed to fit them, more or less. It is quite useless to flourish quantities running to 12 places of figures when 5 places is the limit of any workmanship or observation. Altogether there does not seem to be any notable change in the facts already stated, nor any fresh theory which can be supposed to be original. At least the author is clear of the impossible nonsense of the Davidson theories.

The Decoration of the Tomb of Per-nēb : the Technique and the Color Conventions. By CAROLINE RANSOM WILLIAMS. Quarto volume, ix, 101 pp., 20 pl. New York, 1932. Price \$8.00, bound in paper.

EVEN the occasional visitor to the Metropolitan Museum is probably familiar with the decorated chambers of the tomb of Per-nēb, whose solid and monumental façade looms behind the seated Pharaohs at the right of the large main hall. An Old Kingdom tomb of the late Vth dynasty (about 2650 B.C.), the condition of its wall decoration makes it valuable laboratory material for a study of Old Kingdom technique, as the loss of the ancient surface in some places, and the failure to complete the work in others, reveal various preliminary processes.

Such a study has now been made by Caroline Ransom Williams in *The Decoration of the Tomb of Per-nēb : the Technique and the Color Conventions*, the author's name being itself notification not only that the analysis has been made with scrupulous exactitude, but equally that in its interpretation no analogous material in Old Kingdom painting has been neglected and no plausible hypothesis left unconsidered.

As the subtitle indicates, the first part of the book describes the process of decorating a private tomb of the Old Kingdom : first the filling in of joints and breaks with a coarse plaster ; next the preliminary sketch, with guiding lines and outlines of figures, objects, and hieroglyphs ; then the work of the sculptor, chiselling the outline, cutting away the background, modelling the figures, and finishing the surfaces, with an application of comparatively fine plaster at certain points to cover defects in the carving ; finally, the work of the painter, the white-wash laid over the whole surface as a base for the colours, the second preliminary sketch, and the painting itself—the grey background, the final outlines and solid colour, and the inner details. In connection with this account of procedure various problems are considered, among them the composition of mortar, plaster, pigments, and binding material, the type of brush stroke, the freedom with which guiding lines and sketches are followed, the history of "Egyptian Blue."

The second part of the book, the Colour Conventions, is a close analysis of the significance of the use of the various colours both in the figures and objects of the relief and in the hieroglyphs. Proceeding by comparisons and considerations too detailed to be fully summarised here, this section of the book will be of urgent interest to Egyptologists for the light it throws on the vexed and important question of how far colour may be relied on in interpreting objects and hieroglyphs of doubtful significance. All facets of the subject have been held up to scrutiny—certain possible physiological and psychological factors in Egyptian vision as well as the evidence of analogous examples from other Old Kingdom Tombs.

The twenty plates, of which five are in colour, restate visually the argument of the book, and the very full indexes facilitate reference to individual details.

NOTES AND NEWS.

The name of this journal, *ANCIENT EGYPT*, has been extended to *ANCIENT EGYPT AND THE EAST*, in order to include in its scope the connections between the Near, Middle, and Far Easts in ancient times. There is no other journal which treats of the archaeology of these regions as a whole.

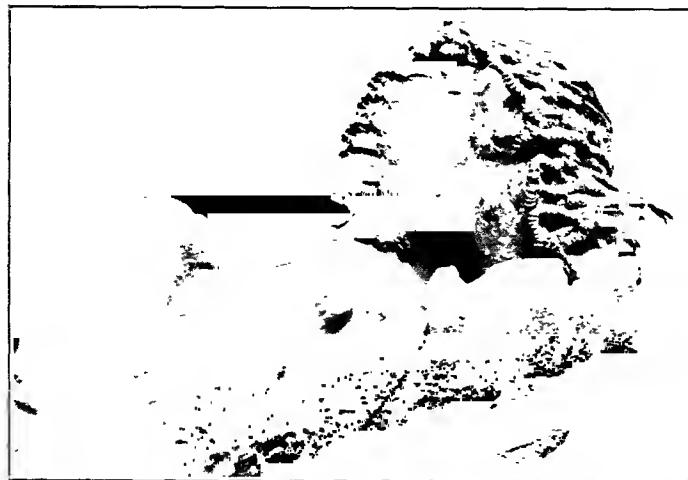
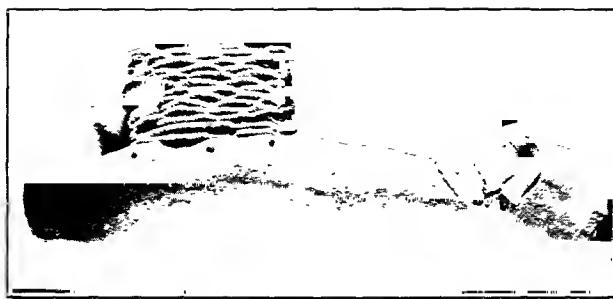
Professor Sir Flinders Petrie is continuing the excavation of Tell Ajkul, assisted by Lady Petrie and other workers, among whom is Mr. Wu, who has already had experience of field work with the Department of Archaeology in China.

Other expeditions which are continuing their work in Palestine this winter are those under the direction of Miss D. A. E. Garrod at Mugharet et Tabun near Athlit, of Mr. Starkey at Tell Wuweir, of Mr. P. L. O. Guy for the Oriental Institute of the University of Chicago, at Megiddo, and of Professor John Garstang at Jericho, in addition to the work of the Department of Antiquities of the Palestine Government.

A year has now passed since the Ancient Monuments Act of the Government of India was amended to enable universities and scientific societies of India and other countries to excavate there—in fact, to continue the exploration of ancient sites which the Government had reluctantly to lay down owing to the prevailing financial stress. The provisions of the Amended Act are both fair to India and generous to the excavator; and it is hoped that expeditions will be organised to further the study of the ancient civilisation of the Indus valley, so important both for its relations with the contemporary cultures of Western Asia and for its influence on modern India.

It is with deep regret that we learn that 'Iraq is contemplating changes in her Antiquities Law. That law as it now stands has enabled the new State to learn and appreciate the great traditions of her country; the archaeologists of England, America, France, and Germany have, indeed, done 'Iraq good service. To the present law is due the rapid growth of the Baghdad Museum, a growth unparalleled in the history of archaeology, for the Museum was begun in one small room by Miss Gertrude Bell and is now one of whose contents any country might be proud. Through the present law, also, collections have been established in the museums of other countries, so that interest in ancient 'Iraq is becoming world-wide and will bring many visitors to that country. It would be a short-sighted policy to curtail that interest by restricting scientific investigation of such international worth. A spirit of narrowness and retrogression is to be deplored in any science; more especially so in archaeology which links the whole world together. Hitherto 'Iraq has been in the forefront of investigation; a thousand pities would it be now to harass with sterile formalities those whose illuminating work has made that country one of the chief seats of archaeological study.

Among the many who would view with regret the closing down of excavations are the 'Iraq tribesmen, to whose loyal and cheerful co-operation as diggers so much of the success of the work has been due.



Predynastic Pottery Model of Papyrus Boat, with Figure of the Deceased seated under an Awning: University College, London.

(*Egyptian Shipping*, p. 12, fig. 45.)

ANCIENT EGYPT AND THE EAST

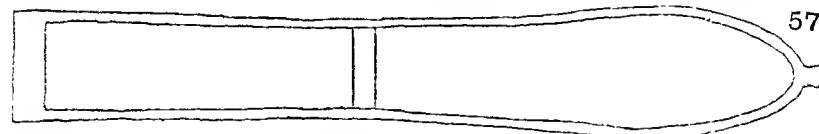
EGYPTIAN SHIPPING.

(Continued.)

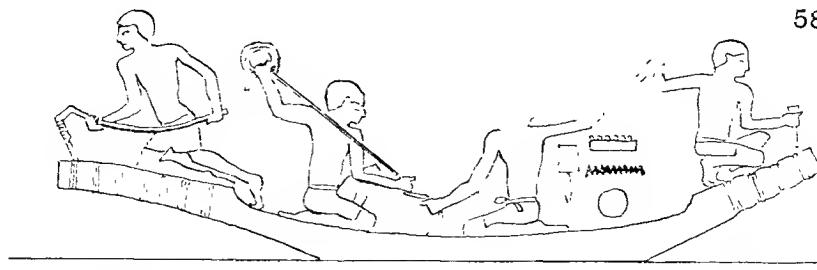
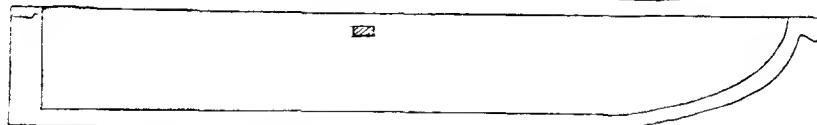
WOODEN SHIP CONSTRUCTION.

THE simplest shape among wooden boats is the dug-out (57). It is carefully formed, well smoothed outside, and regular in thickness. The model is 18 inches long. A single thwart is let in to the sides, without going through. Nothing like it is known in painting, nor any other models. Yet it is certainly ancient, it had been stained red, it is broken near the stern by some heavy weight, and parts of the thick stern are missing. It was bought in Upper Egypt, and there seems no reason to question its source there. The only examples of dug-out trunks that I have seen are two solid block coffins of the Vth dynasty (*Deshasheh*, 18). The form of this model differs essentially from any other boats in the square stern and the knob on the prow.

The construction of a wooden boat on the lines of the papyrus type is figured at Meydum (58). The use of mallet and chisel and a heavy adze proves that the body is of wood. The binding as of papyrus bundles round the ends may be a concession to old ideas, like the stone facing to iron structures to-day. The tying group in the middle may be securing a papyrus covering for the deck.

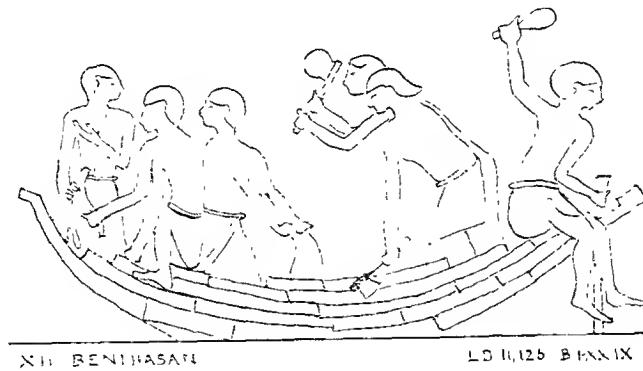


U.C. DUG-OUT

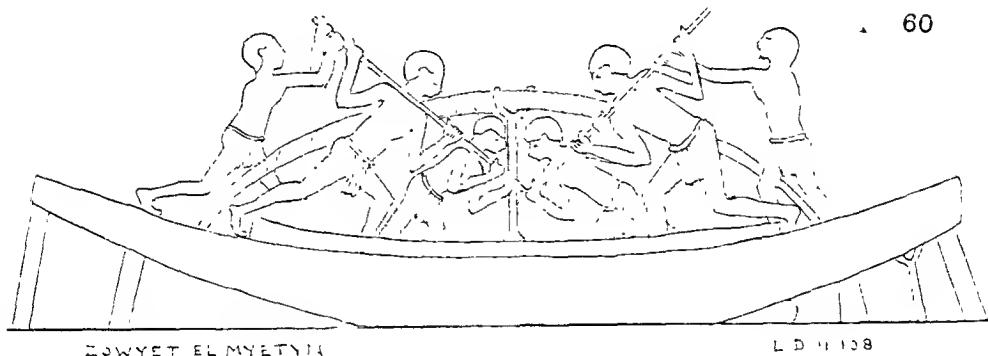


The scene of building a boat of short lengths of *sont* wood is well known (59). The Denkmäler version represents the logs as all crooked; the Egypt Exploration Fund Survey's version shows them straight. The former drawings have been so largely improved on by the lithographer that the latter version seems the safer authority, though it is rougher. The action here is by mallet and chisel at one end, by adze at the other, and by axes for trimming in the middle. Tying also appears, so that it seems that ties were used to clip the strakes together, probably through mortices, as in the Ist dynasty houses (*Tarkhan* I, ix, x). The mode of building, by dowel and mortice in the edges of the logs, we have already described. The scene of bracing a boat (60) before floating it off the stocks we have noted already (p. 3). For Nile boats it was only a temporary precaution, but the brace was permanent for ocean vessels in order to resist the strain over waves.

59



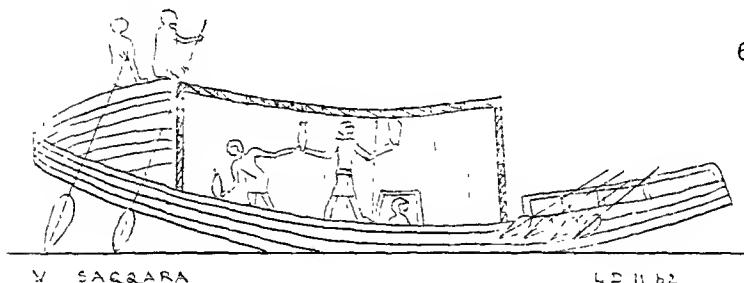
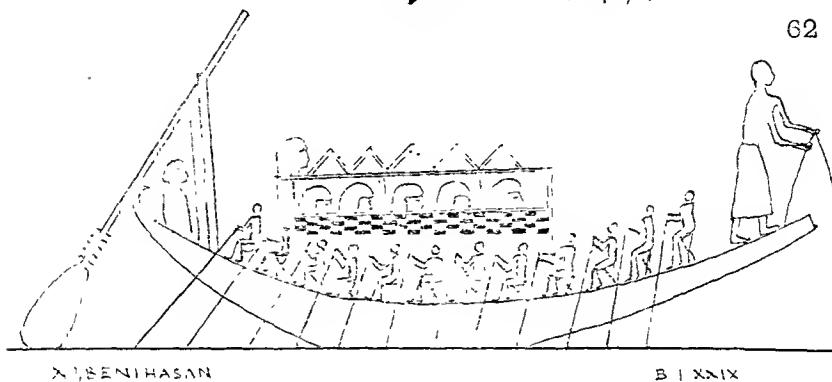
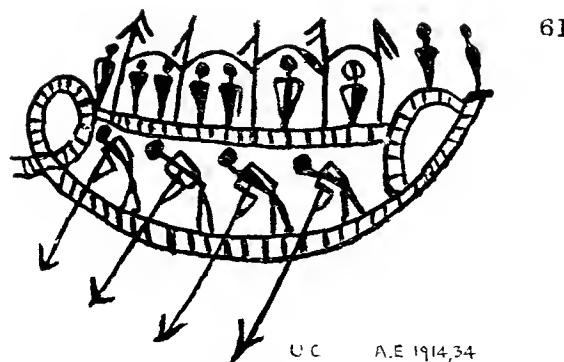
60



FITTINGS.

The fitting up of vessels was already developed in the Gerzean age, when a pleasure ship with cabins for women (61) was employed. It was gently poled along by a few men. The same leisurely progress when out for an airing is seen in the XIIth dynasty (62), where the rowers all sit on high stools, from which no serious pull could have been exerted. This was due to the whole deck being boarded over, so that there was space for legs below. The women are in a long cabin, gay with checkered matting outside, and with a roof ventilated all along the side.

Another favourite roofing in the VIth dynasty and onward was a curved shell of matting on a framework over the steerage, on the top of which the steersman usually sat (63, 71, 72). In front of this other cabins were added. In 63 a large square cabin was framed by papyrus bundles bound regularly,

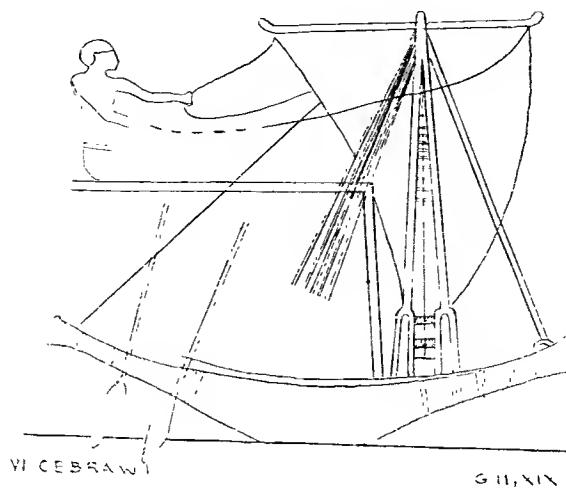


from which strips of matting hung down. They were securely fastened, as a permanent window was placed in the side. This cabin did not occupy the whole beam of the boat, but a gangway was left along the side in order to reach stores below the deck, which are being handed out. Large boats of this kind usually had a low railing around the bows, as on the ocean vessels also (78, 80). The cabin was strong enough to have light goods stowed on the top of it, and the gangway at the side was wide enough for cattle.

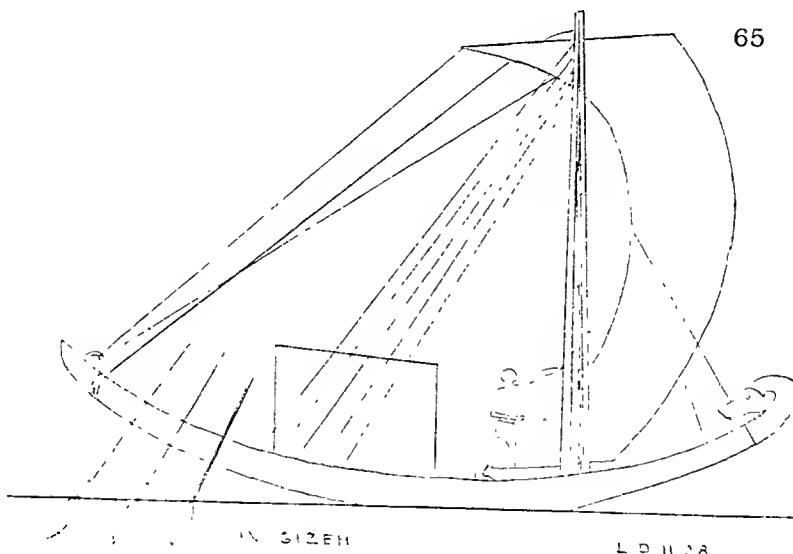
SAILS.

The sail was always hung from a horizontal yard (64, 65). To take in sail this upper yard was lowered (72); or in fighting ships the sail had no spreader yard, but was loose-footed and trussed by half-a-dozen brails at intervals raising it to the yard (82, 83).

While usually there was a spreader-yard below, as in 65, a trigon sail appears rarely (64). It is well adapted to Nile use as the height of the banks leaves little value to the lower part of a sail—most of the breeze is high up. By reducing the sail to a trigon space was saved below for movement and cargo. The forked form of the straddle masts in 64 is remarkable; it may have been intended to



64

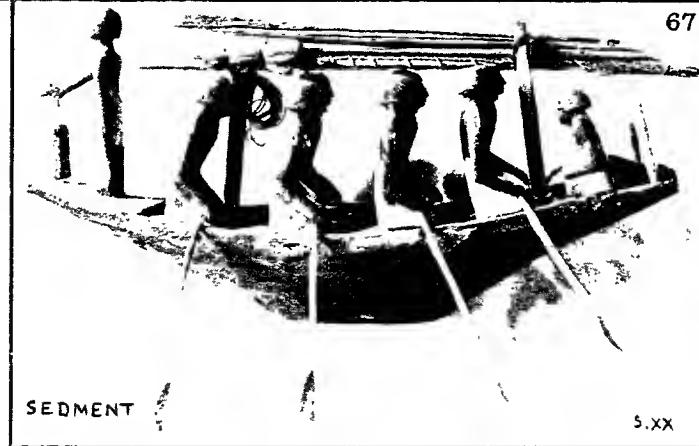
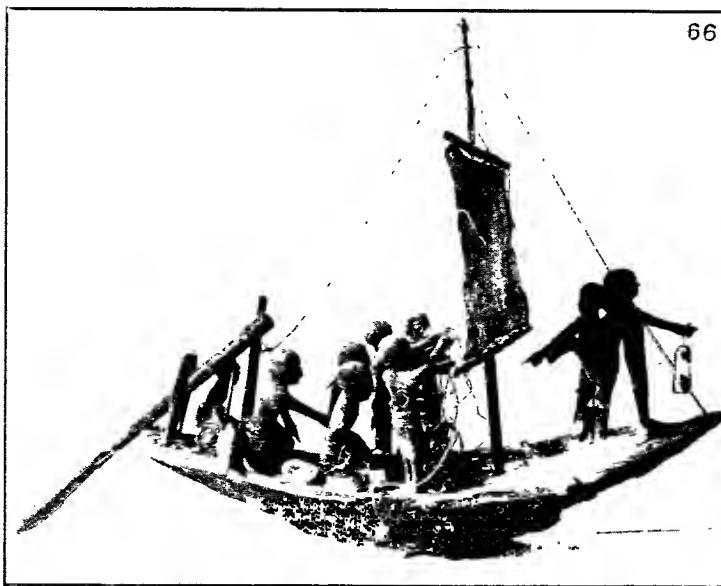


65

spread the pressure on the side. The straddle had a line passing down between the legs (64, 65); this seems to be attached to weights at the foot of the sail, and may be for furling by drawing the foot up the mast. The upper part of the straddle is bridged across with steps, which aided in climbing. In 64 the fore stay is doubled, reeved through a bee near the bow. A back stay is but slight, the five halyards forming the main support of the mast against the wind pressure. The cabin is partly destroyed; on the top is a man holding the vangs for trimming the sail. How the double vang in the left hand was worked is not clear; it looks as if one end was at the main-top, if so it may have served as a bunt-line to hold in the bellying. Of course the cabin and man are far too large and high up in relation to the yard; the view 65 is nearer to the true proportion.

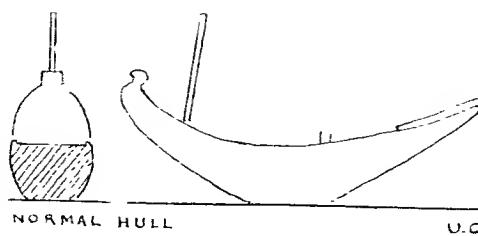
What the action in 65 means is not explained elsewhere; it appears as if a bunt-line held the sail from bellying too far to one side, with a further control by a bowline held on deck: the great length of the narrow sail would make it hard to handle without lateral control. The back stay ran down to loop on to the stern; while the vangs were worked from the stern as a continuous rope through a bee.

The actual models in 66 and 67 are useful, as they give the true positions

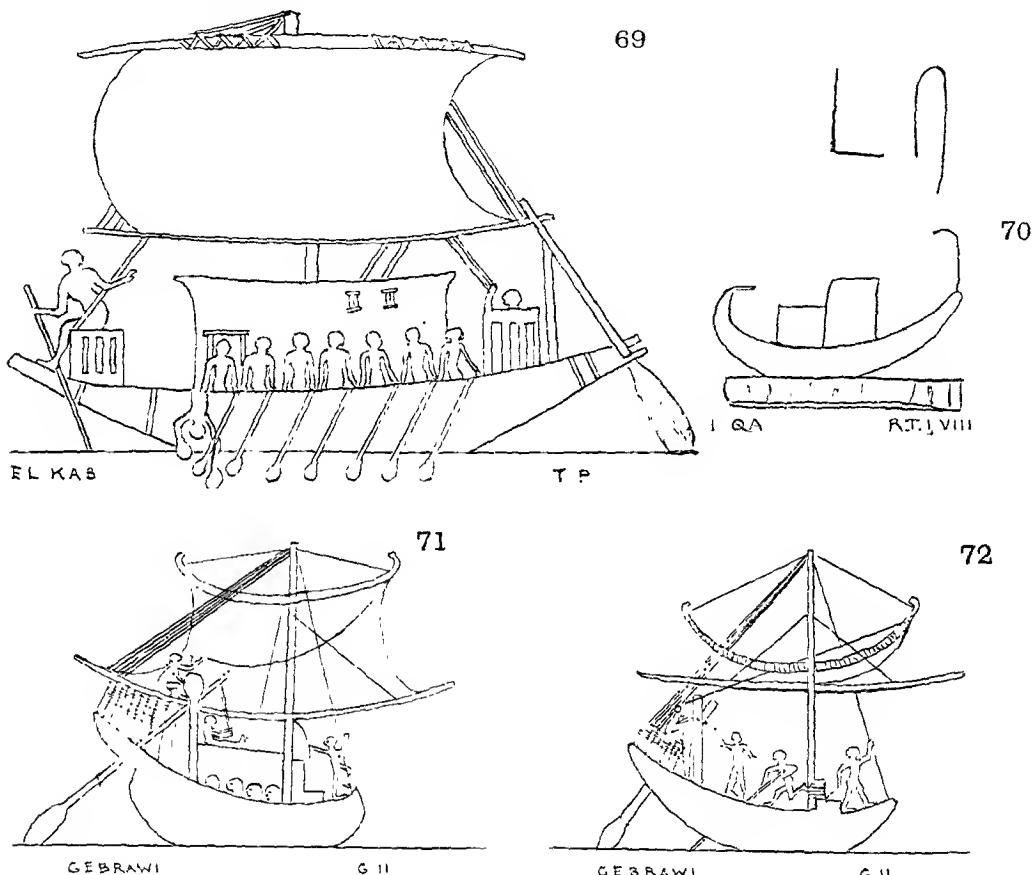


of the men, having been found in controlled excavations (*Sedment I, xx*) ; other exact models (*Gizeh* and *Rifeh, xc*) are at Manchester. At the bows a man holds the fender. For going up the Nile the sail is raised ; for going down, the mast and yards are stowed on posts and the sail done up in a bundle, while the sailors have the oars out to row down. In the *Rifeh* models the look-out and the steersman sit muffled up as the boat is going against the north wind, while they stand in slight dress when going up stream with the wind.

In these funeral models the hull is poorly modelled ; an example at University College (68) shows the flat base (to avoid grounding), the mid-ship section shaded, and the stern outline.



By the beginning of the XVIIIth dynasty Nile boats had more detail. In the time of Tahutmes I, Paheri figures the boat 69 with a large cabin that occupies the main part of the deck having door and windows. Fore and aft are the covers of the gangways to the hold (compare those in 80). The sail is lashed on to the yard. The action of the rigging seems incomplete, as if the artist did not know the working.

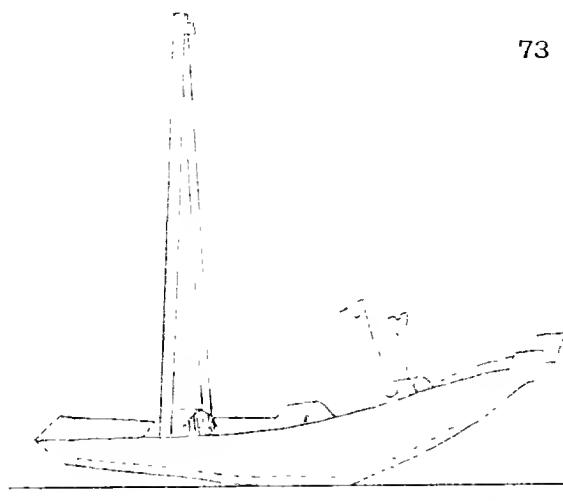


We turn now to abnormal types with high poop and great overhang. The first suggestion of this is in an outline of dynasty I (70). At Deir el Gebrawi the tombs of the VIth dynasty were designed by an artist who loved ships, and plenty of accurate detail is provided. In 71, 72 there is a fence round the stern, apparently of matting, forming a cabin on the top of which the sailor is trimming the sail (71), holding the vang. On a lower cabin sits the steersman happily holding the tiller. There are apparently women in the cabin. At the bows the look-out is holding a rope, perhaps a signal to the steersman. The yard is deeply curved, and the spread-yard is hung by lifts. The great projection of the poop is the punt type (74), perhaps for fishing. The mast in 71, 72 is lashed to a massive knee timber. In 72 the lifts of the yard and spread-yard are seen, also one vang. The yard is partly lowered and the spread-yard raised. The halyards in both vessels run to the extreme stern. The action of the man poling in getting a kick off the mast is true to life, but it implies a very narrow beam.

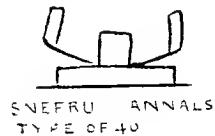
The punt type was evidently for quiet fishing (73, 74). It had a straddle mast, the holes for which are seen in the plan of 74. The awning frame implies

a leisurely time in hot weather. The shallow forepart would easily slip ashore, and the raised stern, open below, would suit fishing.

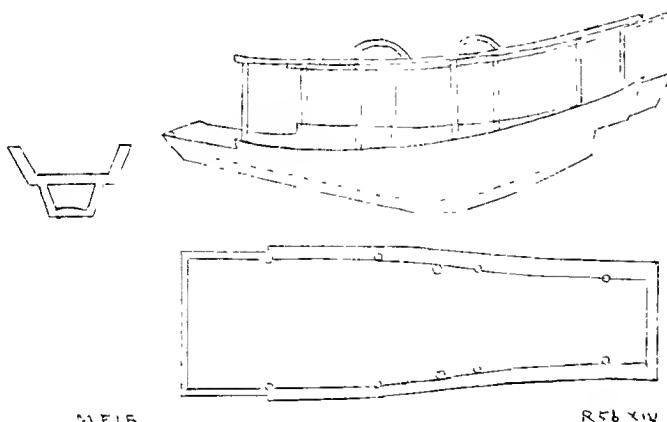
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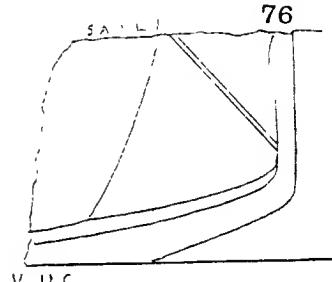
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74

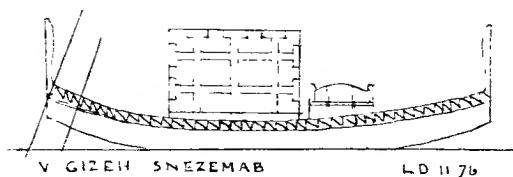


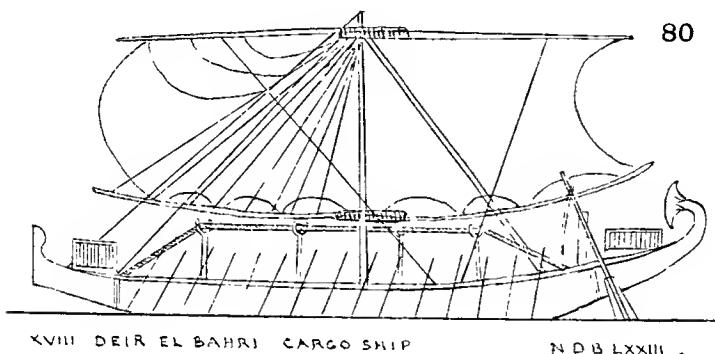
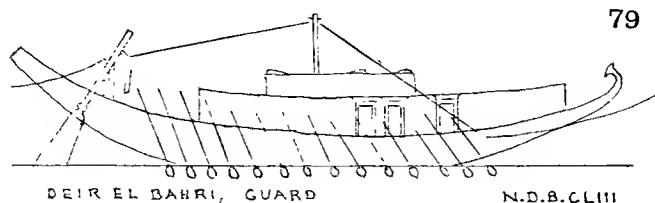
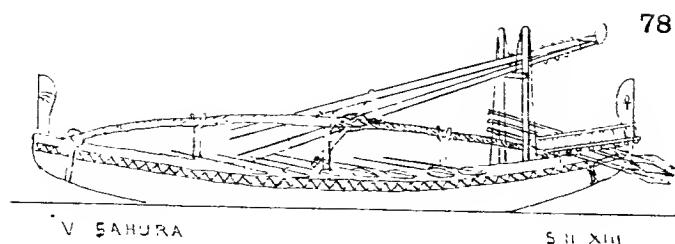
76



The upright prow and stern post were early introduced (75); the forty vessels brought in by Seneferu, presumably from Syria (see 81), were of this type. Though usual on sea-going ships later, such a prow and stern occur on a Nile boat (76), and on the funeral barge of Senezemab (77). The sea-going ships of Seneferu were developed by the time of Sahure (78) for Syrian expeditions to Byblos. The straddle mast is here so heavy that it is not set on posts when taken down, but is let down into a bay between the steering posts over a loop of rope which could be pulled to help in raising the mast. The great rope brace which binds the vessel has a tightening spar in it, which has been twisted to contract the brace, and tied to the quoin post in the middle. The lashing pattern around the boat beneath the rail is not explained. In 77 it

77

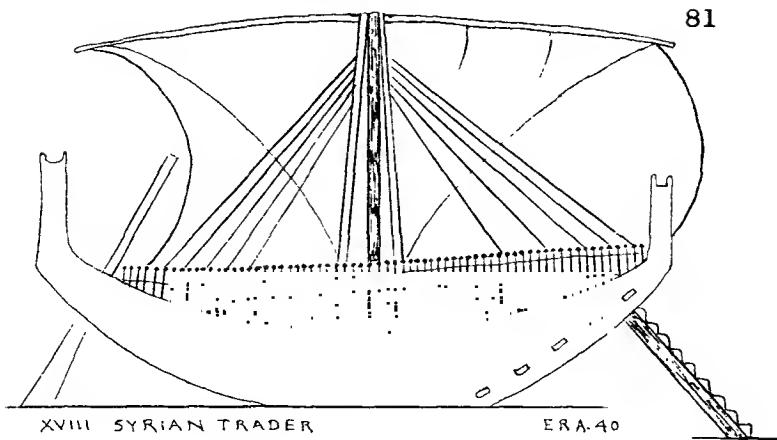




might be the edge of a deck cover held to the gunwale ; but in 78 the deck could not be covered, for the well to hold the rowers' legs would prevent it.

Deir-el-Bahri temple gives many examples of the large type of Nile boat. The guard boat 79 attended a set of ten tugs, of the same form except that both ends were cut square. On this guard boat were the official quarters in two storeys. The lower had framed doorways with lintels, and on the roof of the upper floor were three *mulqafs*, or ventilators. These boats depended entirely on rowing, and the stumpy mast was only for towing ropes. The tugs were all linked together in a chain, the front of one to the steering posts of the next in front, the posts to the mast, the mast to the fore part. Thus there was no strain on each mast except that of the pull caused by its own boat. The mast merely kept the ropes up to prevent entanglement.

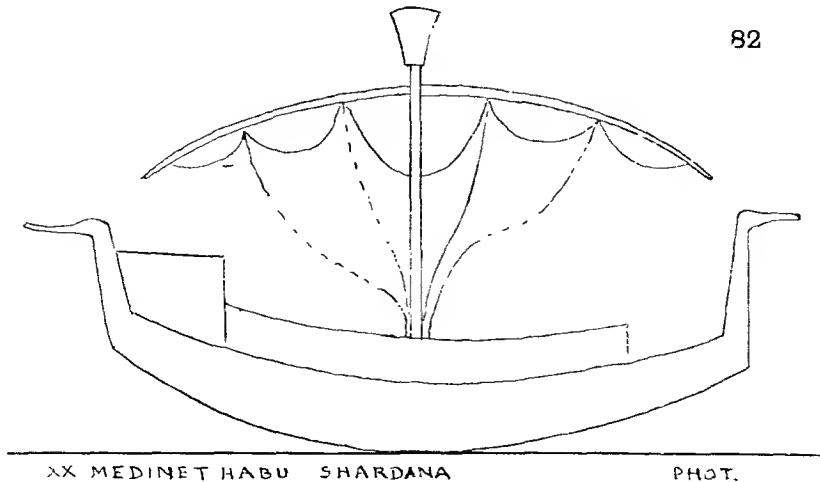
The great cargo ship 80 traded down the Red Sea to the Somali coast of Punt, the name of which remains in the islet Ha-Fun at about $10^{\circ} 20'$ north. The strain of heavy cargo and waves needed permanent bracing, supported on four posts, so as to make a lifting pull at the ends. The hull was lashed round to consolidate it where the pull came. The great yard was made of two pine trunks lapped at the thick ends and firmly lashed together. The stay for the mast was a doubled stay both fore and aft. There were seven lifts on each side for the spreading-yard, but those on the right are here omitted for clearness. The nature of three curved lines from the peak to points along the yard is difficult to interpret. The sails were trimmed by vangs coming to a point rather abaft the mast. The two gratings round the descents to the hold are at the ends.

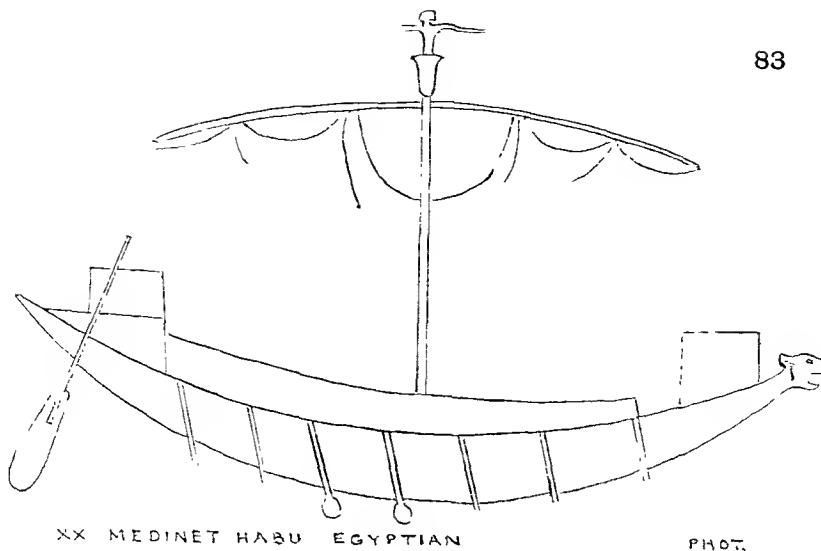


The Syrian ship of the XVIIIth dynasty (81) is of great interest as showing what construction was general, or was peculiar to Egypt. The copy here is enlarged from a small photograph. There is a stout central mast, stayed by a straddle mast, a form which had disappeared long before in Egypt. An abundance of stays or halyards are placed both fore and aft. Two vangs come down from the yard to the deck near the masts. Both prow and stern rise straight up, with a notch at the top. All along the side there is a screen of matting to break the wind and spray. A plank ladder with steps is put out for going ashore. The ends of beams shown all down the bow suggest that there was a considerable width there, and that the form was very bluff in front.

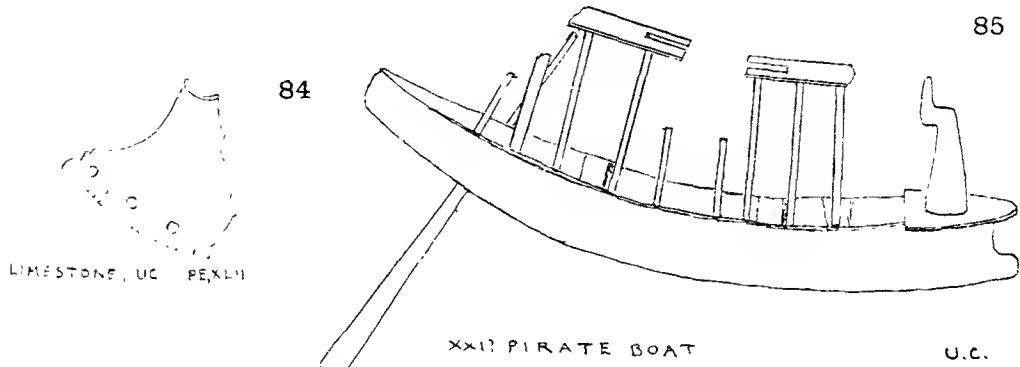
The Mediterranean war ships (82) are figured on the north wall of Medinet Habu temple, in the great naval battle of the overthrow of the Peoples of the Sea, mainly Philistines and Shardana, 1187 B.C. The upright prow and stern posts are like those in the trading ship: but they end in birds' heads. There were long cabins on the ships, and a raised steering platform. The sails were furled by brails, descending to the foot of the mast, thus raising the sail out of the way for fighting. On the mast was a crow's nest for slingers, like the sharp-shooters in our old navy.

The contemporary Egyptian vessel (83) has kept much more the old papyrus lines; in fact it may well have been made of papyrus like the ships in Isaiah.





83



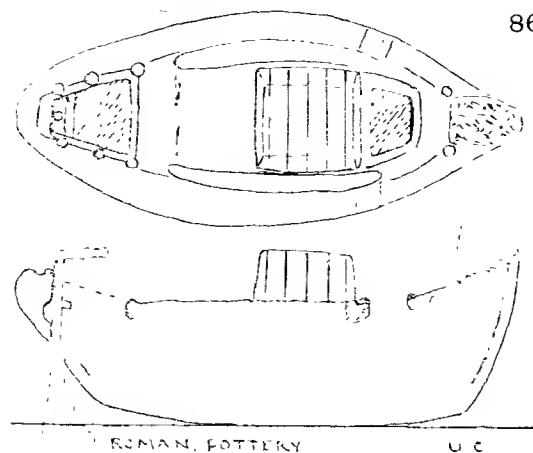
84

The ends slope up and the prow bears a lion's head. The rest of the vessel is of the foreign type, probably borrowed from the foreigner when fighting on the Mediterranean became usual.

Fig. 85 is another vessel of much the same date, a little pirate boat, designed for rapid attack and boarding. There are four thwarts, seating eight rowers. A light wood roof shades part, and would suffice to bear a cloth thrown over it. In the bows is a platform for landing, and below it a deadly little ram. The action would be for the pirates to lie to by some island, and when a small trading vessel passed them row out swiftly, ram it so that the crew would be occupied in saving the vessel; the pirates would then swarm up, catch the top of the stern post to swing on to the boarding platform and so on to the trading vessel. Seizing what they could secure by force, they could return quickly and be off while the trader was saving himself from sinking. The model was mounted on wheels as a child's toy, and was found broken up in a late tomb, probably dating from c. 1,000 B.C.

Fig. 84 shows a strange piece of alabaster, of prehistoric age, which seems inexplicable, unless it be a model of a ram from a vessel.

A barge of Roman date (86), modelled in pottery, serves to show the deck arrangements. There are two entrances, the fore hatch for entering the cabin, the after hatch for stowing cargo. In the after hold a cross-bar held in place the rudder post, which passed through a hole in the stern. The cabin rose high



enough to give a clear view around, and on each side of the deck there were combings to stop wash across the deck; outside the combing the top slopes rapidly outward. There are also slight combings around the hatches. The ornament on the prow is broken away.

FLINDERS PETRIE.

REFERENCES TO SOURCES.

- A. Petrie, *Abydos*.
- A.E. *Ancient Egypt*.
- A.Z. *Aegyptische Zeitschrift*.
- B. Newberry, *Benihasan*.
- B.M. Boreux: Blackman, *Meir*.
- C.P.R. Capart.
- D. Petrie, *Deshasheh*.
- E.R.A. Erman-Ranke, *Aegypten*.
- G. Davies, *Gebrawi*.
- H.H. Harding, *Hemamieh*.
- H. Green, *Hierakonpolis*.
- L.D. Lepsius, *Demkmäler*.
- M. Petrie, *Medium*.
- M.A.P. De Morgan.
- M. Piot, *Monuments Piot*.
- N. Petrie, *Naqada*.
- N.D.B. Naville, *Deir el Bahri*.
- P.E. Petrie, *Prehistoric Egypt*.
- P.S.B.A. Proc. Soc. Biblical Archaeology.
- R. Reisner, *Catalogue*.
- R.T. Petrie, *Royal Tombs*.
- S. Petrie, *Sedment*.
- Savile.
- S.T. Steindorf, *Tomb of Ti*.
- T.C. Petrie, *Tombs of the Courtiers*.
- T.K. Caulfield, *Temple of the Kings*.
- T.P. Tylor, *Paheri*.
- U.C. University College.

THE BISMAR IN ANCIENT INDIA.

THE existence of the bismar on the Malabar coast¹ makes it highly probable that this method of weighing has existed in India for many centuries. The trading relations between Sumer and the Indus valley² introduced to Mesopotamia several elements of the Indus culture and, likewise, were bound to influence the latter's civilisation. As the bismar was known and used in Sumer,³ it ought to have found its way eastwards, and further excavations in the Indus valley may reveal its existence there.

An interesting representation of the bismar is found on the Gandhara relief from the Swat valley now in the British Museum, depicting the legend of King Çivi.⁴ King Çivi is seated on a stool; beside him are a woman and a kneeling man with a knife; further to the right stands an attendant with a bismar and then the god Indra (fig. 1).

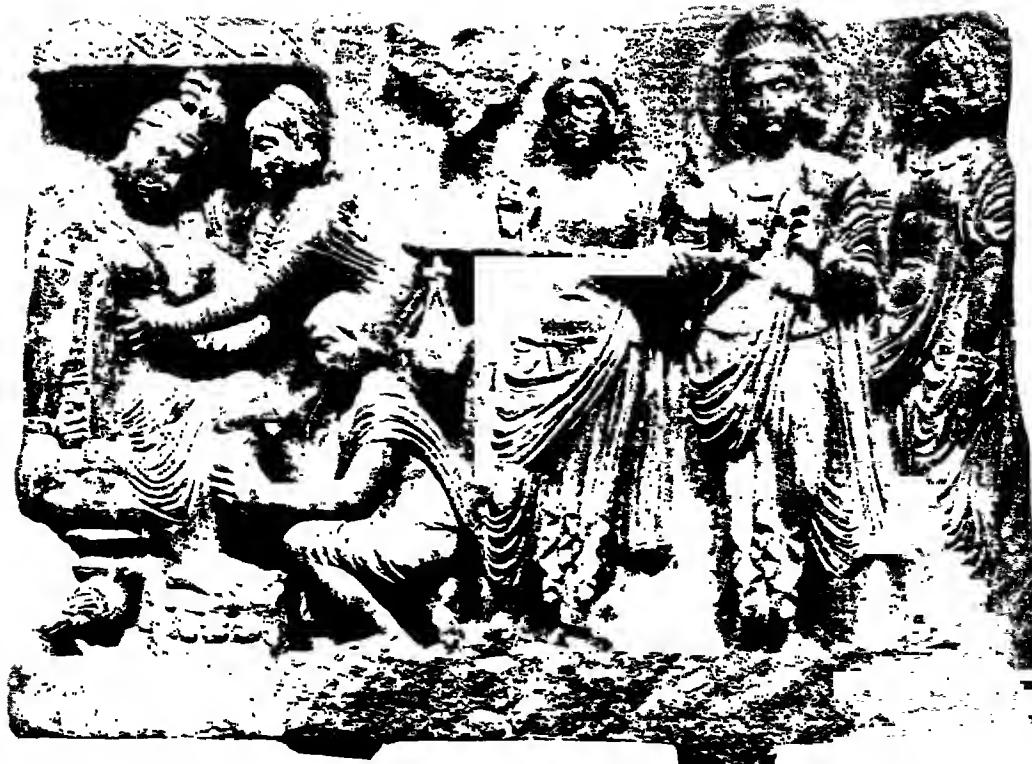


FIG. 1.—GANDHARA RELIEF: SWAT VALLEY.

(*By Courtesy of the Trustees of the British Museum.*)

This bismar corresponds very closely with the Malabar specimen and the Danish steelyard; a similar bismar also occurs on the Amaravati tope. The same legend appears on one of the frescoes at Ajanta (fig. 2), but the bismar is replaced there by the usual scales. Thus, between the IIInd or the IIIrd century A.D. (the dates of the Amaravati tope and the Gandhara relief) and the Vth century A.D. (Ajanta), a change occurred in the iconography of the legend, and whereas the "Eurasian Artist," to use Foucher's expression,⁵ of the Gandhara school considered the bismar as the most appropriate symbol of weighing, the Indian artist of the Ajanta frescoes reverted to the use of scales.

As by the IIInd century A.D. both Hellenistic and Roman art were influencing that of Udyana and Gandhara, it may seem at first as if the use of the bismar is to be traced as a result of Western influence in Indian art. The study of ancient Indian coins, however, proves that this assumption is incorrect and shows that the bismar was in use in India in the days of the Maurya dynasty and even of the Nanda kings.

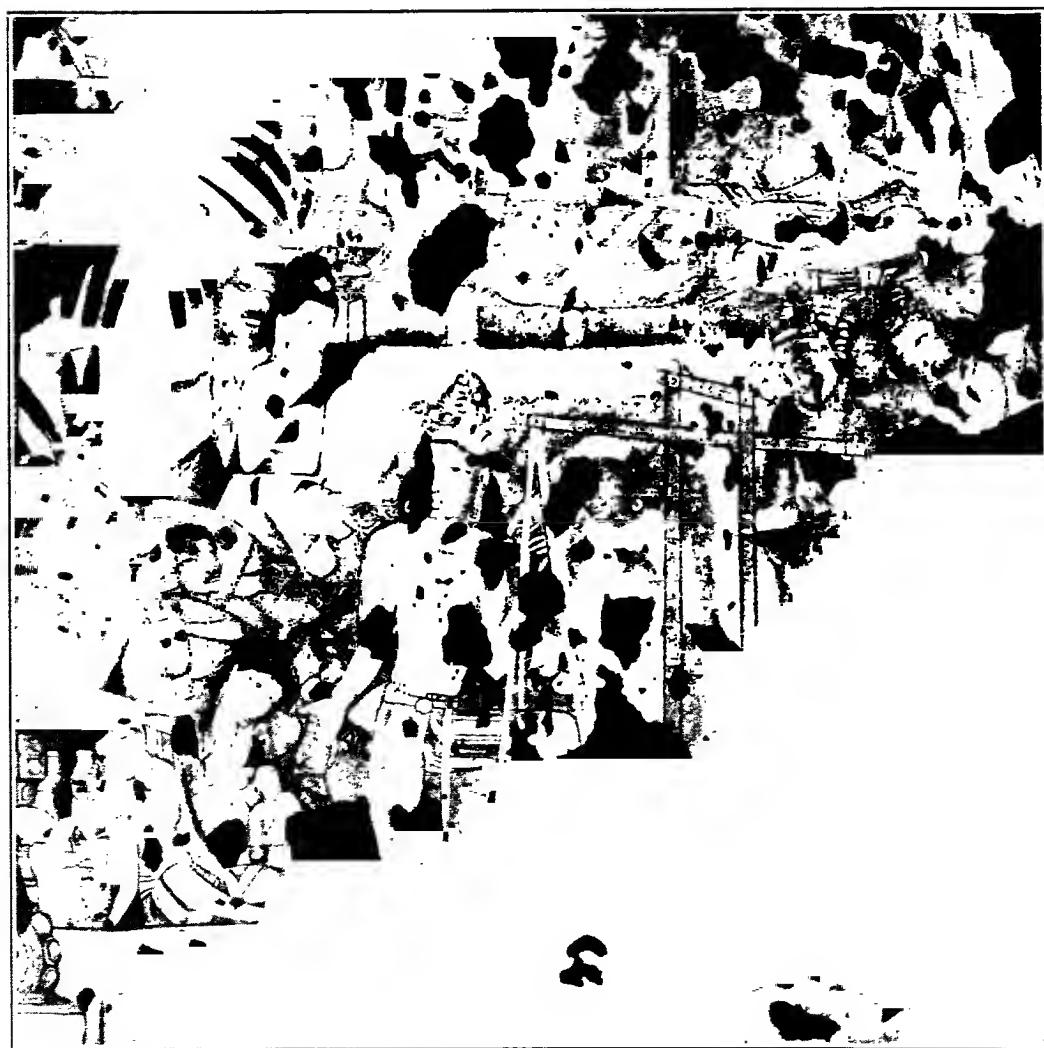


FIG. 2.—FRESCO IN CAVES OF AJANTA.

(By Courtesy of the Authorities of the Victoria and Albert Museum.)

Among the many "punch-marked coins" (*purāṇas*) at the British Museum there are several with the sign of the bismar. These *purāṇas* ("ancient") are rectangular (fig. 3) or circular (fig. 4) pieces, cut from a hammered sheet of copper and clipped to the proper weight. On the rectangular *purāṇa* from Taxila⁶ the obverse bears the sign of the bismar and the inscription "DOJAKA" in Kharoshthi script. On the reverse side is the Brahmi inscription "NEGAMA," which Cunningham⁷ explains as the Gandharian *Nekama*, "custom, habit or use." Dr. L. D. Barnett kindly informs me that he considers that "Negama" can be equated with "guild," and that "Dōjaka" seems to be a personal name; he also thinks that the dash over G (fig. 3) has no phonetic value. This last consideration is of importance, as on metrological grounds the weight of "Taxila, No. 2," must be considered as a unity and, therefore, the stroke may have the same meaning.

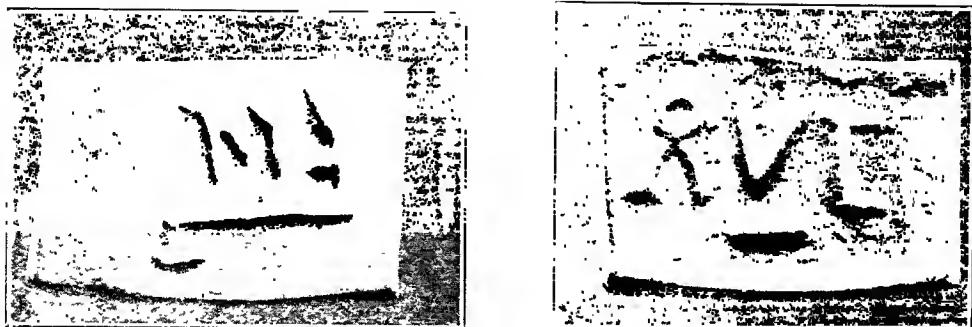


FIG. 3.—PURĀṇA ("TAXILA, No. 2"; BRITISH MUSEUM).
(By Courtesy of the Trustees.)

According to Bühler,⁸ *purāṇas* are guild-tokens and were struck by communal guilds or by goldsmiths and silversmiths. Rapson⁹ considers these tokens to be of "an ancient form and designs, of purely native art, unmodified by any foreign influence." Thus we can say that somewhere about 300 B.C. the bismar was selected by the guilds and crafts of ancient India as indicative of the act of weighing.

Another token or coin with the bismar on it is that from Ayodhya (fig. 4) (British Museum Catalogue, *ibidem*, No. 3); it bears on the reverse the sign of the svastika over a fish. The coins from Ayodhya were first published by Col. Rivett-Carnac in *J. A. S. B.*, 1880, XLIX, 139; he described the bismar as "Thor's hammer"; Cunningham took it to be an axe. But Vincent A. Smith's identification¹⁰ with a steelyard seems to be the correct one and is accepted by the leading authorities.

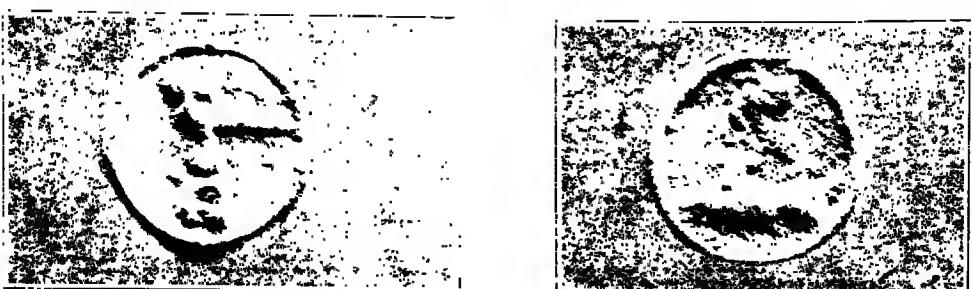


FIG. 4.—PURĀṇA ("AYODHYA, No. 3"; BRITISH MUSEUM).
(By Courtesy of the Trustees.)

Very interesting results arise from the consideration of the weights of these "bismar" coins. The weight of the Taxila coin is 107 grains, or 6.93 grammes; the weight of that of Ayodhya is 36 grains (2.33 grammes). Thus they stand in the relation of 1 to 3, and obviously belong to the same system. This cannot be the Mesopotamian system of the "daric," as even DI (=8.19 grammes)¹¹ is much heavier than 6.93 grammes, and the whole Egyptian system of the "peyem" (from 7.38 to 8.10 grammes) is heavier too. The Egyptian gold-standard "beqa" (from 6.09×2 to 6.81×2 grammes) is closer but still too light. On the other hand, the Mohenjo-daro and Harappa weights, published by Sir John Marshall,¹² belong to the same system as our purāṇas. The Mohenjo-daro weights are of uniform shape, rectangular or cubical, and are made of a hard chert. The system is binary for the smaller weights, and then decimal. The most frequent weights (32 out of 120) stand in the ratio of 16 to the smallest specimen and have a mean value of 13.71 grammes; the next class (22 out of 120), ratio 8, has a mean value of 6.82, with limits from 6.31 to 7.27 grammes. It is to this class that the Taxila coin belongs.

In spite of the fact that the system is binary, there appears a fairly numerous class between the ratios of 2 and 4, the class C of Mr. Hemmy, which he puts at $\frac{1}{2} \times 8$, with a medium weight of 2.28 grammes. Among the numerous weights brought from Susa by the de Morgan expedition and now handed over to me for examination, there are several specimens of that weight, belonging to a special Susian scale, which I would like to call provisionally the "Insect Standard." It is interesting to note that it was found expedient at Mohenjo-daro to include the Susian weight in the system. The Ayodhya coin of 2.33 grammes belongs to this class. Thus metrology supplies us with a definite link between the Indus civilisation of the IIIrd millennium B.C. and that of the Mauryan kings of the IVth and IIIrd century B.C.

I wish to acknowledge my indebtedness to the Director and Trustees of the British Museum for their permission to reproduce the Gandhara relief and the punch-marked coins, and to the Authorities of the Victorian and Albert Museum for the Ajanta fresco. I am particularly indebted to Mr. Sidney Smith, Keeper of the Department of Assyrian and Egyptian Antiquities, to Dr. Barnett, Keeper of the Department of Oriental Manuscripts, to Mr. John Allan, Mr. G. C. Brooke, and Mr. E. S. G. Robinson, of the Department of Coins and Medals, and to Mr. K. de B. Codrington, of the Victoria and Albert Museum, for their kind assistance and information on many points of archaeological and numismatical interest. It is my pleasant duty to put on record my sincerest thanks to Colonel P. K. Koszlov, to whom I owe my first initiation to the Gandhara culture.

N. T. BELAIEW.

REFERENCES.

1. E. Thurston: *Bull. Madras Gov. Museum*, 1901, v. IV, No. 2, p. 125.
2. Sidney Smith, *The Early History of Assyria*; *Illustrated London News*, Oct., 1924, and *ibidem*, Feb. and Oct., 1932.
3. *Seminarium Kondakovianum*, 1932, V, pp. 165-180.
4. *Man*, 1913, No. 11, pp. 17-19.
5. Foucher: *L'Art Arcéoboudhique du Gandhara*, 1918, v. II, p. 2.
6. British Museum Catalogue, *Coins of Ancient India*, by J. A. Allan, 1933, fig. 2.
7. Cunningham: *Coins in Ancient India*, p. 63.

8. Bühler: *Indian Studies*, III, 49.
9. Rapson: *Indian Coins* in *Grundriss der Indo-Arischen Philologi und Altertumskunde*, Strassburg, 1897, II, H.3.
10. V. A. Smith: *Catalogue of the Coins in the Indian Museum, Calcutta*, v. I, Oxford, 1906; *Coins of Ayodhya*, pp. 148, 149. J. Allan: British Museum Catalogue, *Coins of Ancient India*, 1933; Surendra Kisor Chakrabortty, *Ancient Indian Numismatics*, Calcutta, 1931.
11. *On the Sumerian Mina*, Trans. Newcomen Society f. 1927-8, vol. VIII, 1929; *Seminarium Kondakovianum*, 1928, II, pp. 187-222.
12. *Mohenjo-daro and the Indus Civilisation*, edited by Sir John Marshall; chapter XXIX, by A. S. Hemmy, on the System of Weights at Mohenjo-daro, pp. 589-596, vol. II, London, 1931.

(Reprinted from *Seminarium Kondakovianum*, VI, 1933, with acknowledgements to the Kondakov Institute, Prague, by kind permission of Colonel N. T. Belaiew, C.B., M.R.I.)

PATHOLOGY AND ART AT EL AMARNA.

In the *Zeitschrift für Ägyptische Sprache*, Band 68, Zweites Heft (1932), pp. 114-119, Herr Felix Proskauers, dissatisfied, as we all are, with the various suggestions offered in explanation of the peculiar conformation of the human body displayed in Amarna art, puts forward yet another theory. He believes that the artist reproduced carefully and correctly what he actually saw, and that the unusual anatomical features depicted were the result of the disease of rickets--affecting not only the royal family for generations, but long rampant among the people. These features, he says, are characteristic of rickets, and the pelvic deformity proper to the disease, he thinks, may fully account for the peculiar head-shape special to the art.

It sometimes happens that theories become stereotyped merely for lack of contradiction, and the purpose of this paper is to test the grounds on which this suggestion rests. It is better to have no theory than a false one.

The writer in the *Zeitschrift* holds that rickets had been widespread in Egypt since the time when the Heliopolitan priesthood flourished, and that the influence of that priesthood derived from the discovery of the healing powers of the sun. The idea that these priest-physicians at their medical school actually antedated discoveries thought to be new in the XXth century is attractive; but no evidence is offered. Similarly, it is alleged that Akhenaten's worship of the sun was due to his recognition of its curative effect on his rachitic condition. Putting aside the improbability that so diseased a nation could have survived so long and accomplished so much, we may first consider whether the presence of rickets in Ancient Egypt is a thing we might reasonably look for.

Rickets is caused by deficiency in certain food factors and by lack of sunlight. Its occurrence in sunny Egypt is compared by Herr Proskauers to its presence in modern India, where the people are driven indoors on account of the heat. But the cases are not parallel: such an indoor life is not called for by the less intense heat of Egypt, and the evidence would seem to show that the Ancient Egyptians led an outdoor life--the women moving about freely in farm and market, and joining their men in outdoor sports. Moreover, Ancient Egypt is being compared with modern India. We have no evidence that rickets existed in ancient India, and we know that as late as 1917 it was rare in Kashmir¹; and further, its growing prevalence in tropical countries is definitely associated with the increasing use of artificial foods deficient in vitamines.² In addition, we have in all Mohammedan countries the unhealthy seclusion of women, while the excesses of the purdah system in India are productive of serious bone disease with which rickets is associated, all this being of comparatively modern origin. There is no reason to think that the food of the Ancient Egyptians was wanting in vitamines. It comprised wheat, barley and other grains, vegetables, fresh and dried fruit, meat, fish, bird, milk and honey, all of which except honey are supplied with the vitamines necessary to nutrition. We need concern ourselves only with the anti-rachitic vitamine D, and this is found in the fat of meat, in

bird and fish, in radishes, freshly dried dates and figs, and abundantly in milk, whether of cow, buffalo, sheep or goat. In all these the vitamine is found fully formed, but in certain other foods, including wheat and other grains and fresh grapes, figs and dates, there exists, not the vitamine itself but its precursor ergosterol. When the violet rays of sunlight reach the skin in the presence of the calcium and phosphates belonging to the body, they act upon the ergosterol which has found its way towards the surface and form vitamine D. Even if the poorer people ate little flesh-meat, it would be of small importance, for vitamine D is contained only in its fat and that in small quantities. Of the foods containing either the vitamine or its precursor and of the sunlight needed to effect the biochemical conversion required, there cannot have been any shortage.

We have a right then to demand very definite evidence for any assertion that rickets was present in the land, and for this Herr Proskaues adduces the prevalence of dwarfism. It is true that dwarfs were well-known in Ancient Egypt, but they were not rachitic dwarfs. He figures a specimen dwarf, one of the Pataiki ("Patäkenfiguren") of late times. From the outline of the figure given here (fig. 1), it will be seen that this dwarf owes his condition to the disease called achondroplasia, which differs from rickets both in origin and manifestations.

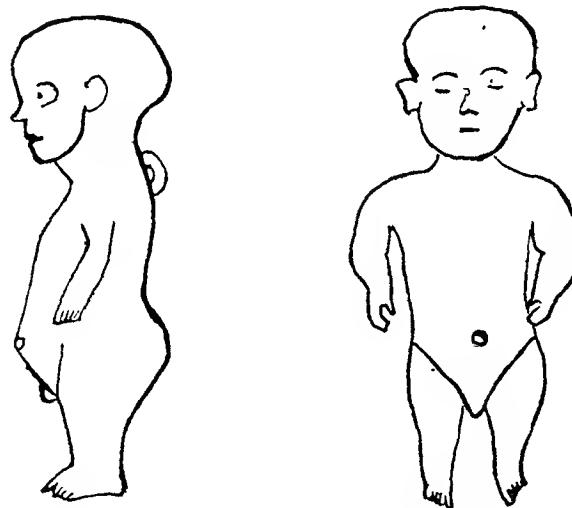


FIG. 1.

The following are the chief characteristics of the achondroplastic dwarf: the head is short compared with its breadth, with a high vault and protruding forehead; the bridge of the nose is sunken. The trunk is of about normal size, but appears large on account of the short limbs; the legs, often bowed, are short, especially the thigh-bone, and to this the diminutive height is due; the arms are similarly reduced, especially the upper arm. These are the features of the Pataiki, including the one figured, and of most of the dwarfs represented in statuary and reliefs; it is also the form of the hieroglyphic determinative for the word dwarf in the Old Kingdom, as seen in the inscription of Herkhuf.³ Dwarfs figured in the tomb of Anta (fig. 2) show the characteristics well⁴: the body of the well-known statuette of Khnumhetep at Cairo is typical, and there are very few dwarfs that cannot be definitely referred to this class.

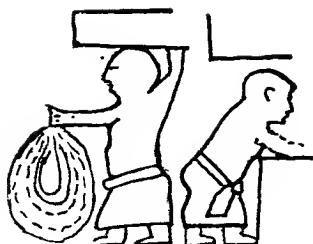


FIG. 2.

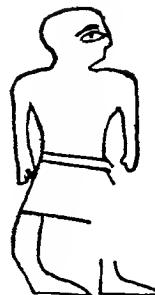


FIG. 3.

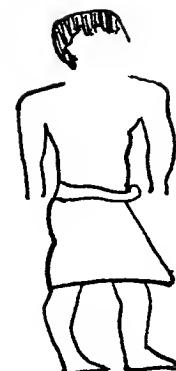


FIG. 4.

The rachitic dwarf is different. The bones of the head form bosses at the sides and front, producing an appearance of squareness which the artificer might be excused for confusing with the short head of achondroplasia ; for in spite of the extraordinary lifelikeness of his effects, the Ancient Egyptian artist is not accurate as to anatomical detail. But he could not and did not fail to note the different proportions of body ; for the marked disproportion between trunk and legs does not exist in rickets even though the height may be reduced. On the other hand, the bow-legs or knock-knee may be more in evidence, while the constriction of the thorax known as Harrison's sulcus and the flat pelvis are proper to this disease. Two dwarfs figured at Beni Hasan might be considered rachitic : fig. 3 (B.H. II, xxxii) is so bow-legged as to suggest this disease ; fig. 4 (B.H. II, xvi) fails to show the definite disproportion between trunk and legs, though the arms are short. But such figures are rare compared with the other type and must be judged in relation to the evidence as a whole.

There are not many dwarfs at Amarna : six figures can perhaps be reduced to two individuals, for they are always in pairs and the pairs resemble one another so strongly that we may fairly regard the persons⁵ represented as the same each time (fig. 5, A, B, C).

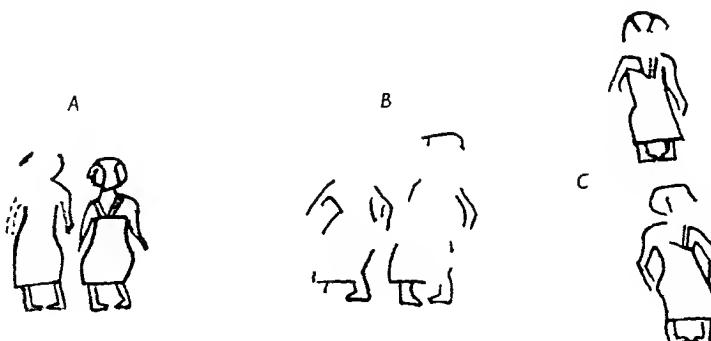


FIG. 5.

Five of these figures, and probably all six originally, have their feet turned inwards, a condition due to talipes. Talipes is of a pathological origin quite different from rickets. It is accompanied by a shortening of the affected limbs which if bilateral would produce diminution of stature, and it may be that this is all the artist meant to convey : yet we cannot but note that these stumpy figures have something of the proportions of achondroplasia and none at all of rickets, thus showing what the idea of a dwarf suggested to the artist's mind.

Leaving the evidence of art for that of osteology, we find a persistent negative to the presence of rickets. Among the records of several thousands of Ancient Egyptian skulls examined in this country, it is impossible to find a reference to a rachitic condition. The excavators in Nubia,⁶ in the examination of some 6,000 bodies found no sign of rickets, and they note that Dr. Elliot Smith had the same experience in the examination of large numbers of bodies from Egyptian sites. They conclude therefore that "Rickets was almost certainly unknown in Egypt and Nubia up to the first few centuries after Christ." Elliot Smith and Dawson in their *Egyptian Mummies*⁷ record that "no true case of rickets . . . has been found in any ancient Egyptian remains"; and Prof. D. E. Derry is good enough to inform me that this is his experience also.

Coming now to the royal family in particular, Herr Proskaues evidently feels—and his readers must agree—that the presence of rickets in a family with all the advantages of food and hygiene at their disposal does need explanation. He finds it in their heredity and suggests that a streak of "Bürgeratum"—and therefore of rickets—had come in through Tiyi. He does not offer any evidence that Yuia and Tuia were either "bürgerlich" or rachitic, and their tomb and mummies indicate neither.⁸ He appears here to be using the term heredity in the strict scientific sense, denoting the transmission of a condition or disease directly from parent to child. The hereditary nature of rickets, however, is by no means to be taken for granted: some evidence for it has been offered, but the consensus of scientific opinion at present is to the contrary, though poor resisting power towards it may be congenital.⁹ In discussing the remarkable length of head which the art seems to attribute to Akhenaten and his family, the ground is shifted to natural selection, the view being that the flat pelvis of rickets acting for generations would eventually modify the head-form of the race, through the greater facility with which narrow-headed individuals would be born. The long narrow head, we are told, would become hereditary—hence arose the pathological dolichocephaly of the royal family; and as time went on, so prevalent did the rachitic head and body become that in the late period it had acquired a stereotyped representation in the Pataiki. To the assertion that this diseased race had power to modify its racial head-shape, we must reply that head-form cannot thus be permanently altered; that in fact unusual length of head did not prevail in the XVIIIth dynasty; and that flat pelvises prevailed at no time in Ancient Egypt. The ratio of length to breadth of the head is a racial character and, beyond ascertainable limits of variation, does not normally change except in the presence of racial admixture. The breadth-length ratio proper to the race exists in pre-natal life, but to a less degree than after birth,¹⁰ and the new-born head is a little wider proportionally than it afterwards becomes.¹¹ As the average length of the head at birth is only $4\frac{3}{4}$ inches and its breadth $3\frac{5}{8}$, this ratio can be a very small facilitating factor as compared with the extensive moulding and overlapping of the still soft bones and tissues that must and does take place in order to allow the head to pass at all. Indeed, if it were not entirely negligible, the whole world would by the same argument become dolichocephalic, for the same difficulties exist in the healthy pelvis, though to a less degree than in the rachitic one.

Change of head-shape has been induced experimentally in individual rats by depriving them of vitamines,¹² but even had the Egyptians been short of vitamines this would not help the argument, for the experiment did not bear on heredity and the change induced was a widening, not narrowing of the head. The typical head of rickets, as we have seen, is wide—the very last shape to facilitate birth in a flat rachitic pelvis.

Two other factors productive of dolichocephaly are brought forward by the writer in the *Zeitschrift*: one is a pathological condition of the mother affecting prenatal life, but very rare and not hereditary; the other a pulling on the head by the neck muscles during hard muscular work. Both of these he dismisses as not applicable to Ancient Egypt and we may certainly do the same.

How fantastic are these assertions of progressive rachitic dolichocephaly may be seen from a study of the facts of craniology, as set forth in Dr. G. M. Morant's *Study of Egyptian Craniology from Prehistoric to Roman Times*.¹³ From the measurements by himself and other competent observers of over 5,000 skulls, he takes the mean measurements for each series. Only the cephalic index need be considered here, and in this is seen a steadily decreasing degree of dolichocephaly as time goes on. Figures from one of the many tables given will illustrate the process:—

Early Predynastic series ;	mean C.I.	71.7
Late	"	"	"	72.1
Dyn. VI to XII	"	"	"	73.6
Dyn. XII to XV	"	"	"	73.1
Early and Middle Dynastic (El Kubanieh);	mean C.I.			74.4
Dyn. XVIII to XXI ;	mean C.I.	75.1
Dyn. XVIII to XXI ;	mean C.I.	75.1
Dyn. XXVI to XXX ;	"	"	"	75.1
Ptolemaic series ;	"	"	"	73.1

With the last may be compared another contemporary series by Broca giving a mean C.I. of 76.8.

Of the royal crania belonging to dyn. XVIII,¹⁴ Thothmes II, who died 130 years before Akhenaten began to reign, is the most dolichocephalic, with an index of 72.7. His successors have respectively 76, 75 and 77, while the skull formerly attributed to Amenhotep III, but which may belong to a later king,¹⁵ has an index of 76.

With the skull found in the Tomb of Tiyi and thought to be that of Akhenaten there appears a remarkable change, for the skull is flattened and wider than any skull of the dynasty except that of Ahmes, which owing to its correspondingly increased length is still dolichocephalic. The skull from Tiyi's tomb has an index of 81 and so has that of Tutankhamen which resembles it in form. Prof. D. E. Derry¹⁶ believes the former to be that of Smenkh-ka-ra and because of the similarity thinks the two were brothers, sons of Akhenaten but not of Nefertiti—or at least that they were nearly related. If this were so, it would not be unreasonable to conclude that their father may have had the same sporadic head-form, and that this broad head is what the Amarna artist was trying to express. Its transference to the court would be complimentary and no one need be accused of rickets.

Nefertiti seems to be regarded by the writer in the *Zeitschrift* as certainly an Egyptian and therefore subject to the national malady. We do not know what shape her head was: in the crown she usually wears it is quite obscured, and though in statuettes¹⁷ it appears elongated this is obviously due to a head-dress. In fig. 6 and fig. 7¹⁸ it is of perfectly normal form.



FIG. 6.

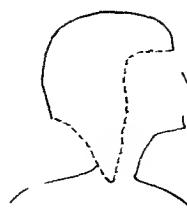


FIG. 7.

As to body, Herr Proskauers seems to credit Nefertiti with a flat pelvis, constricted thorax and flat feet, all of which might be expected in extreme rickets. It is true that she sometimes appears with a pinched torso as in fig. 6, but on such occasions she is dressed in elaborate garments and engaged in religious rites. At other times, and far more frequently, she is depicted with a perfectly well-formed torso as in fig. 8,²⁰ while the profile of statuettes suggests a pelvis far from flat.



FIG. 8.

The evidence of osteology, though not exhaustive, is such as to place a heavy onus of proof on anyone asserting the prevalence of a flat rachitic pelvis, for no such pelvis has ever been recorded. Owing to the destructibility of the part, measurement is too often impossible; but the Archaeological Survey of Nubia records eleven pelvises showing abnormal features, of which nine were measurable, and so far from showing flatness they were all unusually round. The most important diameter as regards flatness is the internal conjugate; that

is, the distance between the sacral promontory and the posterior margin of the pubis. If this, multiplied by 100, be divided by the longest diameter of the brim at right angles to it, we obtain the brim-index. Fig. 9 will make this clear.

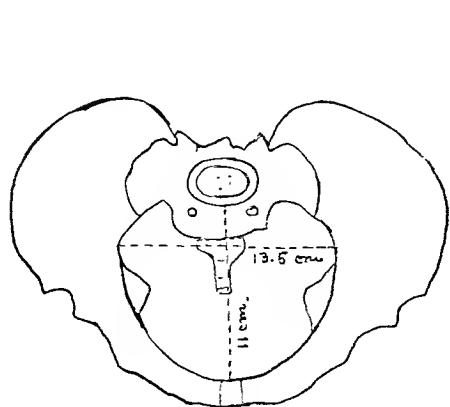


FIG. 9.



FIG. 10.

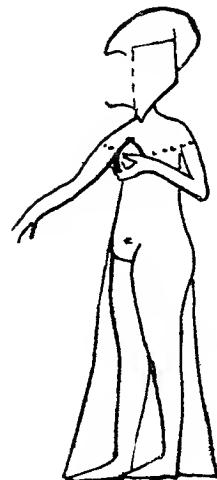


FIG. 11.

The normal index in modern European female pelvises is 81.5: a figure smaller than this will indicate flatness, a larger one the reverse condition. Now, of the pelvises from Nubian cemeteries, ranging from Pre-dynastic to Early Christian times, two have indices showing a slight degree of flatness (but no rickets), namely, 79 and 81. The remaining indices are 82.9, 87, 88, 92, 97, 99, and 100, the last figure representing a brim equal in both diameters, the so-called round pelvis. In the wall-case behind the Nubian Pathological Collection in the College of Surgeons is a similar pelvis from Saqqara belonging to dynasty VI, to which Prof. Derry appended a note to the effect that this form is common among the women of noble families at the period. Thus almost every abnormality recorded is in the opposite direction to the one suggested by the writer in the *Zeitschrift*. Turning now to the Amarna Princesses we find their heads quite consistently represented as long, a condition which cannot have resulted from rickets. The appearance may be due merely to a mode of dressing the hair, as suggested by Dr. M. A. Murray; on the other hand, if Smenkh-ka-ra and Tutankhamen were their half-brothers, their peculiar head-form might conceivably be shared by the half-sisters and be depicted by the artist in this way. The same remarks apply to their bodies as to that of Nefertiti: their putative "Harrison's sulcus" appears only when they are in full dress and occupied in religious rites, as in fig. 10²¹; otherwise, and often on these occasions also, their thoraces are perfectly normal (fig. 11).²²

All the family appear with flat feet and this, as Herr Proskaues says, does occur in rickets; but it is far from being diagnostic, for there are many conditions which cause a relaxation of the ligaments of the foot, some general, and some merely local. It would be difficult to suggest a condition which would apply to most of the nation at the same time, and it would be admissible to believe that the artist, like some of his predecessors, is either depicting a shoe or has chosen to ignore the dictates of the canon.

All the family too have more or less protuberant abdomens and fat thighs, and so have all the high nobles. A rare disease has been suggested for this in

the case of Akhenaten,²³ but a rare disease would not affect the whole court, and we have tried to show that as far as rickets is concerned Amarna must be given a clean bill of health. Perhaps it is only a stylization of the king's obesity. But the aim of this paper is not to adjudicate among positive theories ; it is only to combat a false and harmful one, even though the result be " putting us to ignorance again."

E. M. GUEST.

REFERENCES.

1. Castellani and Chalmers, *Manual of Tropical Diseases*, 1919, p. 1945.
2. M. Harston, *Care of European Children in the Tropics*, 1912, p. 34.
3. De Morgan, *Cat. des Mon. et Inscript.*, Vienna, 1894, p. 169 *et seq.*
4. Petrie, *Deshahsheh*, pl. xiii ; see also M. A. Ruffer, *Studies in the Palaeopathology of Egypt*, Cairo, 1921, pls. vii, viii, ix, and pp. 35-48.
5. N. de G. Davies, *El Amarna* II, pl. v ; V, pl. iii ; II, pl. viii.
6. Wood-Jones in *Report of the Archaeological Survey of Nubia* 1907-1908, Cairo, 1910, p. 263.
7. *Egyptian Mummies*, 1924, p. 157.
8. Th. M. Davis, *Tomb of Iouiya and Touiyou*.
9. A. F. Hess, *Rickets*, 1930, p. 177.
10. Maur-Fischer-Lenz, *Human Heredity*, trans. E. and C. Paul, 1931, pp. 117-8.
11. W. M. Feldman, *Principles of Antenatal and Postnatal Child Hygiene*, 1927, pp. 627-30.
12. *Zeitschrift für Morphologie und Anthropologie*, Stuttgart, 1925, vol. xxiii, Part 3, pp. 433-6.
13. *Biometrika*, vol. xvii, June, 1925.
14. Elliot Smith, *Royal Mummies*, Cairo Cat., 1912 ; and Ruffer, *op. cit.*, pp. 335-7.
15. Howard Carter, *Tomb of Tutankhamen*, vol. II, p. 147.
16. Prof. D. E. Derry, *Annales du Service des Antiquités de l'Égypte*, XXXI, 1931, p. 98 *et seq.*
17. Berlin 21263 ; and see M. A. Murray, *Egyptian Sculpture*, 1930, pl. xxxiv.
18. Petrie, *Amarna*, pl. xii ; cf. Davies, *Amarna*, V, pl. xxvi.
19. Davies, *Amarna*, III, pl. xxxiv.
20. *Ib.* I, pl. xxx ; cf. I, xvii, xxii, xxvii ; II, vii, xii, xiii, xvi, xxxii, xxxiv, xli, etc., etc.
21. *Ib.* V, xxvi, xxxix ; cf. VI, iv.
22. *Ib.* III, vi. ; cf. I, xxvi, xxx ; II, x, xii, xviii, xxxiv, xxxviii, etc.
23. *Cambridge University Medical Society Mag.*, 1926, IV, 37.

AN IVORY IN THE PETRIE COLLECTION.

THE carved ivory shown in fig. 1 was purchased by Professor Petrie at Naqada some years ago. It was said to have come from Ballas.

Representing, as it apparently does, a female figure in the flounced *kaunakes* familiar in Ancient Mesopotamian and Cretan Art, it is of great interest and is, as far as is known, unique.

It was published in "Prehistoric Egypt" (pl. I, fig. 3), and its provenance and possible sequence date (45) are given in the text, but without further comment. It is strange that its interest should have attracted so little notice among students of Prehistory.¹



FIG. I.

Until recently no examples of this costume from Mesopotamia could be dated earlier than about the middle of the 3rd millennium B.C. (from Crete the earliest example is several centuries later), but recent excavations at Ur have disclosed it on seals of Queen Shubad, of which an example is given in fig. 2, and at Kish on seals of the pre-Flood period (fig. 3), both of which, on the most moderate reckoning, bring the costume within the minimum estimate of the date of the Proto-dynastic or Early Dynastic age.

1. It is referred to by G. D. Hornblower (Some Predynastic Carvings, *J.E.A.*, vol. XIII, Parts III, IV, page 241) in a footnote, as a figure in a skirt or dress of the Kaunakes type.

Assuming that the object is correctly diagnosed as of this period, one would naturally associate it with men of the type represented by the other ivory figurines shown on the same plate representing gowned, full-bearded men² with shaven upper-lips (fig. 4), and the more aquiline strongly bearded types exemplified by the captive of Setet (on a carved ivory gaming-rod, fig. 7A) and the figure prostrate before the bull on the Narmer palette (fig. 6).³



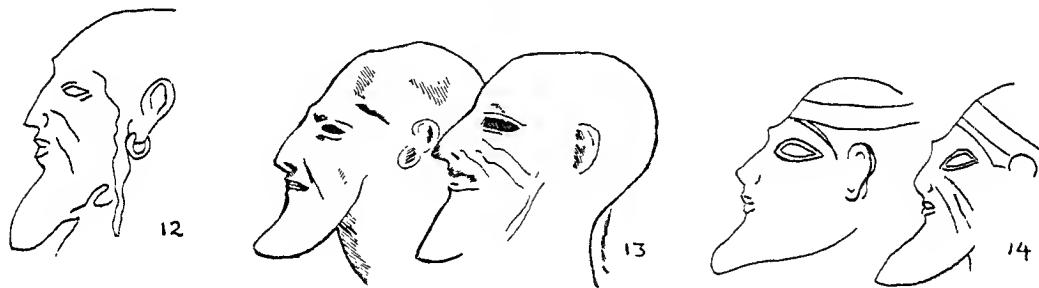
2. This remarkable figure (head only given here) is in the Ontario Museum. A photograph of it is published by Hornblower, *loc. sit. supra*, from which the figure is drawn.

3. These two aquiline bearded types (*vide* also fig. 5 of later date) are by several authorities regarded as the Anu, the troublesome Bedawi of ancient Egypt. They may well be cross-breeds of aquiline "strong-beards" (Meshwesh, Amorites, *vide* figs. 12-14) with the Hamitic aborigines in Southern Egypt, as the Tehenu appear to have been in Libya.

Newberry long ago drew attention to some remarkable evidence for community of certain cult-symbols in Minoan Crete and Proto-dynastic Egypt,⁴ and Sir Arthur Evans has collated the striking indications of their cultural relations, comprising resemblances in costume, bows, shields, physical types (figurines), button-seals and boats, pointing to a considerably advanced civilisation in the Delta.⁵

Among the figurines are bearded types (fig. 7) which, in view of the above, preclude any need to regard the Egyptian tusk-figures as importations from Mesopotamia or the Persian Gulf by the Red Sea Route.⁶

Examples are given (from Egyptian art and elsewhere) of Meshwesh of Libya (evidently a mixed race, figs. 12, 14), Tehenu (figs. 9, 10), Amorites (fig. 13) (a blonde people regarded by Professor Sayce on philological grounds as of Mitannian origin), and a (? late Bronze Age) type from Cyprus (fig. 8). "All the evidence at our disposal," says Sir Arthur Evans, "archaeological, religious, and linguistic, points to root connection between Crete and Anatolia."⁷ Here, then, we have the source perhaps of these bearded peoples who would certainly have settled in Cyprus before they voyaged as far afield as Crete.⁸



4. P.S.B.A., xxviii, p. 73.

5. Presidential Address. J.R.A.I., LV, 1925; *vide* also Newberry, P.S.B.A., 1906, p. 68. The figure-of-8 shield (in question) quickly died out in Dynastic Egypt but persisted in Libya with the round shield, as is evidenced by rock drawings. It is probably the prototype of shields of analogous shapes used by Hamitic and Libyoid peoples in N. Africa.

6. The route favoured as the line of cultural connection with Egypt of Mesopotamia by many Egyptologists.

7. In view of the Anatolian face-line (straight Grecian brow-and-nose-line) of the "Armenoid" Early Kings, Sir A. Evans's testimony of early maritime connection of Crete with the mainland to the East substantiates Dr. Elliot Smith's contention as to their Armenoid origin, and does not disprove Dr. Hall's suggestion that from their appearance they might be Cretans.

8. Sir A. Evans, *op. cit.*, advances the evidence above-mentioned as proof of proto-Libyan relations with Crete, in addition to the Anatolian connection. Regarding the Haau and/or Haanebu of the Delta (who from late Egyptian drawings were very Cretan in appearance), *vide* Newberry, P.S.B.A., 1906, 68, and Hall, *op. cit.*, p. 35.

The long-gowned bearded figure on the Gebel Araq knife-handle, the lower part of a gowned conqueror on the Ashmolean slate palette, and the gowned types portrayed on these carved tusks, all point to an established influence in Early Egypt of people with, probably, Mesopotamian culture, and possibly of Anatolian origin.⁹

ERNEST S. THOMAS.

9. Fig. 11 represents a Lesghian from the Caucasus, who, although moustached, suggests the tusk type. For possible connection of the ancient Egyptians with the Caucasus on mythological grounds, *vide* Sir F. Petrie, "Origin of the Book of the Dead", *Ancient Egypt*, 1926, part II.

SOURCES OF FIGURES.

1. *Prehistoric Egypt*, pl. I, fig. 3.
2. The Royal Tombs of Ur, C. L. Woolley in *The Museums Journal* (Philadelphia), 1928, XIX, 1, p. 7.
3. From a seal-print in the Ashmolean Museum (by kind permission of the Keeper).
4. From pl. LXIII, *Journal of Egyptian Archaeology*, vol. XIII, Parts III, IV (1927).
5. From a drawing of a cross-belted captive on a pot from Semam, Nepata. *Liverpool Annals of Art and Archaeology*, X, Parts 3, 4, pl. 31.
6. From the Narmer palette.
7. From *Journal of the Royal Anthropological Institute*, vol. LV (1925), p. 216.
- 7A. From Petrie's *Royal Tombs*.
8. From a pottery head from Cyprus given to the Pitt Rivers Museum by Mr. G. D. Hornblower (by kind permission of the Curator).
9. Head of a Libyan from the Tomb of Seti I (Capart).
10. From a VIth dynasty temple at Abusir.
11. A Lesghian from Chantre, *Recherches Anthropologiques dans la Caucase*, I, IV, pl. 18.
- 12-14. From Racial Types, Petrie (Maspero, *Struggles of the Nations*).

THE MAT WEAVER FROM THE TOMB OF KHETY.

THE picture from the tomb wall at Beni Hasan representing the Mat Weaver has already received much attention and study, notably by L. Klebs in "Die Reliefs des Mittleren Reiches" and by C. H. Johl in "Altägyptische Webestuhle", yet no definite conclusion has been reached on many of the points raised.¹ Some of the questions raised and discussed by these writers can, I believe, be answered by a comparison of the picture with the mat weaving of the present day in Cairo and other parts of Egypt; and others, if not solved so definitely, can at least be given an intelligent interpretation.

There are several drawings of the picture, published respectively by Cailliaud,² Champollion (fig. 1),³ Rosellini (two versions),⁴ Gardner Wilkinson (figs. 2 and 3),⁵ and Newberry.⁶ Those by Cailliaud and Rosellini are in colour.

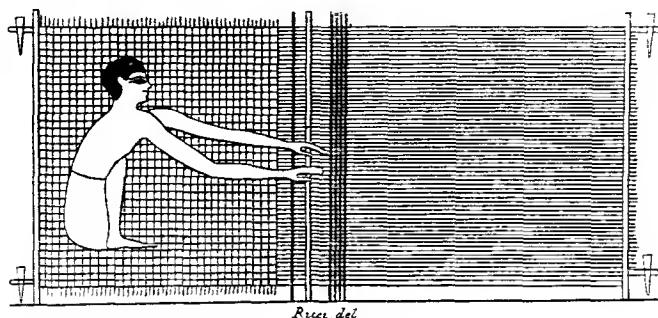


FIG. 1.

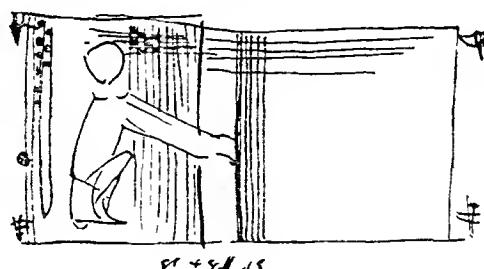


FIG. 2.

(By kind permission of Mrs. Mosley.)

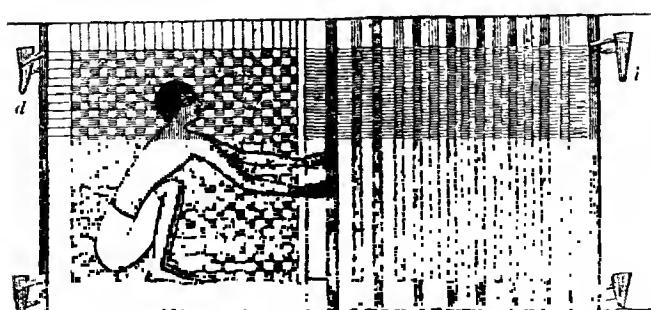


FIG. 3.

The Loom.

On a comparison of these drawings the loom appears to be very simple. They all agree in showing two beams, each fastened to two

pegs, with the warp stretched between the beams. Minor differences are that the lines showing the fastening of the pegs to the beams appear in Cailliaud almost like a hook, in the other drawings like a loop ; but this is not of any importance, the fastening was probably in the past, as in present looms of this class, simply a cord lashing the two together. All the drawings give the same simple horizontal loom, pegged out on the ground. In the coloured drawings the beams and pegs are coloured red (Cailliaud) or reddish brown (Rosellini), a colour I take, as do former writers, to represent wood. The bar seen passing across the centre of the loom may then be taken, from its similar colour, to be also of wood, and a part or appurtenance of the loom. Only one bar is shown, and this is in contrast with the picture of the loom in the Tomb of Chnemhotep, where two rods cross the loom as well as a third held in the weaver's hand.⁷ We have then to consider the weaving as carried out with only one aid, whether for beating up or shed making, a wooden rod of some kind ; and we must turn to modern primitive practice to find out where and how this is done.

This type of loom pegged out on the ground is well known and is in use at the present day in Egypt, Palestine, the Sudan, and among the Bedu in Transjordania, North Africa and the Egyptian Desert, both for textiles and mats.

It is usually provided with a rod heddle and a shed rod, but I know of two types more primitive than this : one is the loom used for weaving blankets by the Hadendoa (Red Sea Hills), who make no heddle but use only a shed rod ; the other is the horizontal mat loom of Egypt and Palestine which is provided only with a rod pierced with holes.⁸ Other wooden appliances used occasionally with this type of loom and which might conceivably be shown in a picture are the long sword beater, and a wooden support sometimes placed under the warp ; the "donkey", as it is called, because it bears the warp on its back.⁹ The rod shown across the warp in the Ancient Egyptian picture may then be one or other of these four aids to weaving, and we must see which best agrees with the way in which it is represented—the shed rod, the rod with holes, a sword beater, or a warp support. The last-mentioned, a warp support, can be ruled out at once because the rod is shown as passing over the warp and a support is under it ; also a support is always placed near the end of the loom, except when the work is just beginning, not in any case near the centre. Nor can the rod be a sword beater, again because it is above the warp and with the weaver's hands upon it in a position quite other than that in which the sword would be held. The shed rod is in no better case, for in use it lies between the warp threads and only the ends can be seen clearly, standing out at the sides. But when we come to consider the rod with holes we see at once how well it agrees with the rod in our picture. As the warp threads pass through the holes in the mat-maker's rod, the rod is, of course, seen clear above them, as it is in our photographs and also in the picture from the Tomb of Khety ; and another striking likeness is seen when the position of the weaver's hands in the picture is compared with that seen in the photograph of the blind mat-maker (fig. 6), who is beating up with both hands on the rod.

The holed rod or, as I would prefer to call it, the holed beater-in, receives further support from the fact that Sir Flinders Petrie found a portion of one at Kahun,¹⁰ now in the Manchester Museum. This piece of wood measures in length 90.8 cm. \times 8.8 \times 3.8 and is perforated by 28 holes about 27 to 40 mm. apart. Petrie termed it a "weaver's beam for making rush mats," and commented on its likeness to the beam used by the Egyptian mat weavers of the present day. I find it very similar in appearance to those I have seen in use.

Those I have measured were about 2 metres long and the holes were drilled into them at intervals of a little more than a centimetre; one had about 180 holes to the 2 metres, which is a closer setting of the holes than in the Kahun example. The modern examples vary slightly in size, and no doubt the ancient ones did too; probably the Kahun beater was used for a coarser kind of mat. It is curious to observe that the holes, which can be clearly seen in fig. 7, are worn in precisely the same way as those in the Kahun beater; they remain narrow at the top, and widen out irregularly at the sides and base from friction during the beating. In date the Kahun find is said to be of the XIIth dynasty, and is therefore of the same period as the Beni Hasan picture.

Warping and Weaving.

It seems then that we can safely accept the closest comparison between the ancient and the modern mat loom, and can go on at once to consider the weaving to see if there, also, we can find any enlightening resemblances. Unfortunately, there is only the one ancient picture of mat weaving, and none of the warping, so that we can only find one moment in the continued action of making a mat to compare with it.



FIG. 4.

(Photos: Matruff, Cairo.)
FIG. 5.

The modern warping is shown in fig. 4; the worker walks up and down carrying the twine warp over both beams, through the holed rod, and over or under a string at the end of the loom that keeps the crossing, although for the particular kind of mats that he usually makes a crossing is quite unnecessary.

It may be that the crossing is useful for some type of mat that I did not see, or it may be that the habit of putting it in survives from a time when this kind of loom was in more general use than now ; this string reminds one of the laze threads which are seen on the loom of Chnemhotep.¹¹ The twine warp is put through the holes with a large steel needle, as seen in the photograph ; it is difficult to carry a long thread in this way and the worker whom I saw made frequent joins in his twine. Three or four of the warp threads on either side are set up double or in a thicker twine, so as to make a strong selvedge.

An early stage in the weaving is shown in fig. 5, where the weaver is sitting on the ground behind the breast beam darning the strands of reed through the warp. It must be realised that this is sheer hand work throughout ; the holed rod serves only to keep the threads separate and in their proper order. The darning has to be done entirely by eye and hand, and varies according to the pattern chosen ; in fig. 5 the reed strand is being passed under two and over two of the warp threads, as is usual for the check pattern.



FIG. 6.

(Photo : Masraff)

When large mats are required, as for the mosques, two or more weavers sit together and they set in their strands of reed at the same moment, their speed and unanimity being a thing to wonder at. So that the weaving shall not be too bulky and also to serve as a guide, it is a common practice to leave one hole in the rod unthreaded where the strands of reed overlap. At the selvedge the weavers turn back the ends of the weft in and out of the selvedge warps and beat them in ; but when patterns are being woven they will leave the coloured strands out to be cut off later, thus keeping a self-coloured border. The reeds used, chiefly *Juncus acutus*, L., and *J. maritimus*, Lam., are of a most agreeable pale yellow—whether natural or acquired by bleaching I do not know—and the favourite dyed colour is green. Many patterns are woven in these two colours, pale yellow and green, the one seen in fig. 5 is a simple check, and diagonals are shown on the mats hanging behind the workers in fig. 6, but some are very much more elaborate than these. In this photograph (fig. 6) the work has advanced further and the weavers are squatting on the half-finished mat ; one of them is beating up with both hands on the rod.¹²

The attitude of the weaver in the Tomb of Khety is now perfectly intelligible. He is weaving a reed mat with a check pattern in the weft, and the work is so far advanced that he has to sit upon it ; the moment caught by the artist is that in which he is beating up a throw of weft, and both his hands are on the beater-in. The colours of the mat, as described and also as seen in the coloured drawings, are green and yellow, which are, as already mentioned, to this day the favourite colours for Egyptian patterned reed mats.

So far we have met no difficulties ; the drawings agree in the particulars we have examined, and they agree with actual observation of modern mat-making. But when we turn from the weaver in the picture to the right-hand side of the loom, the part of the loom beyond the beater-in, we see at once those differences in the drawings, some trivial and some serious, which have caused all the difficulties in their interpretation. We will take the trivial ones first. On this right-hand side Champollion (Ricci) (fig. 1) has 64 warp threads which run down to the check pattern in 35 squares ; Cailliaud has a red warp varying from 41 threads from the back beam to the beater-in to 45 between the beater-in and a first throw of green weft, with 30 squares ; Rosellini (No. 1) has a yellowish warp in which the threads are not indicated, except for 64 short threads sticking out at the outer side of the back beam, and 24 squares ; Rosellini (No. 2) has a more abundant red warp-in of 115 threads and 26 squares ; Gardner Wilkinson (fig. 3) has 72 warp threads and 27 squares.

The correct proportion of threads on the modern analogy (fig. 5) would be two warp threads to each square of the check pattern, with probably eight threads or so extra for the selvedges ; but this proportion is not given in any of the drawings, and in any case their variations are so great as to leave it quite uncertain what the number of threads in the original might have been. Fortunately, this is not essential to the understanding of the picture.

There are other far more serious discrepancies : in each drawing there are to be seen lines crossing the warp on this side, and in every drawing they are different. For example, Champollion (fig. 1) has 4 lines (each double) crossing the warp close to the beater-in ; Rosellini (No. 1) has 5 lines across the yellow warp, painted over with green and so appearing as one band, while Rosellini (No. 2) has alternate green and yellow bands, 13 in all ; Cailliaud has 19 bands, all green ; and Gardner Wilkinson shows bands of 4 lines each, 13 in all, no difference in shade being indicated. In Newberry's drawing, the right-hand side is left blank, except for a small portion showing transverse lines at the top immediately beyond the beater-in ; by the time his drawing was made that portion of the picture had suffered much and was probably unintelligible. In the attempt to get to the root of the matter, recourse was made to the original drawing by Gardner Wilkinson, a photograph of which was given me by Dr. F. Ll. Griffith and is published here, by kind permission of Mrs. Godfrey Mosley. Here again (fig. 2) the loom is clearly shown, with the check pattern on the left, "gr. and yellow" being written below, and the weaver is seated with his hands on a strong line across the warp. Beyond this line, a few lines of warp are suggested and 4 or 5 other lines crossing them. Of course, in comparing such a drawing with the completed and published one (fig. 3) one must make allowances for amplifications probably warranted by notes or memory. One thing is certainly confirmed by it, viz., that there *were* some lines crossing the warp in the original picture. Considering it together with the other drawings, another thing becomes equally certain, that these lines were not clear, and that they were differently

interpreted by each draughtsman who saw them. They certainly do need interpretation, be they few or many, for from the weaver's point of view there should be no lines there, except those of the unwoven warp. Various suggestions have been made to meet this difficulty. If the more elaborate drawings are accepted, and the bands crossing the warp regarded as a stripe pattern, then a plausible conjecture is that the picture shows a piece of weaving all but finished, in which the work has been begun from either end (a proceeding not unknown in primitive practice), the completed portion being in stripes and the portion to be finished being in check pattern; when the weaver reaches the centre the warp is to be cut there, and the beater-in released, leaving two small mats complete. But if, as seems far more probable, those drawings are more nearly correct which do not give so many and regular bands, then this explanation will not serve. A second explanation that the check pattern is a mat laid over the completed weaving and has nothing to do with the work is—rightly, in my opinion—rejected by Herr Johl as a counsel of despair. But there is another



FIG. 7.

(Photo: Masraff.)

simpler explanation than these. If the photographs, figs. 6 and 7, are examined it will be seen that there are bundles of reeds lying across the warp beyond the beater-in. This is a common practice among mat-makers, which I have seen many times; sometimes the reeds lie loose, as in fig. 7, sometimes tied in bundles, as in fig. 6. The Egyptian artist did not draw in our perspective, but he did draw what he thought ought to be there and had often seen: and I must think that if he drew lines beyond the beater-in of a mat loom, it was because it was usual to see something there in the looms of his day. I suggest that the ancient mat weaver had the same habit as his descendants, and that the bands across the loom in the Tomb of Khety are intended to represent the bundles of green and yellow reeds lying ready to the weaver's hand for the completion

of his check pattern mat. It is easier to understand the ancient pictures when, because of some happy survival, we ourselves see what the artist saw.

I observed these points long ago, but I could not make them comprehensible to others for lack of illustration; the sheds and old warehouses in which the weavers work are often very dark, and the looms so close to the walls that to focus a camera is difficult. Fortunately, two years ago, when passing through Cairo, I secured the co-operation of M. Masraff, a specialist in press photography; and the weavers were willing both to show their skill and to have their photographs taken.

G. M. CROWFOOT.

FOOTNOTES.

1. C. H. Johl, *op. cit.*, says on page 34: "So bringt uns dieses Bild eine Fülle von Fragen, deren Beantwortung heute noch nicht möglich zu sein scheint."

2. F. Cailliaud, *Recherches sur les Arts et les Métiers*, pl. 18, 1.

3. Champollion-le-Jeune, *Monuments de l'Égypte et de la Nubie*, pl. 366, 2.

4. Rosellini, pl. 41.

5. Gardner Wilkinson, *Manners and Customs of the Ancient Egyptians*, 1837, vol. 3, p. 134; 1854, vol. 2, p. 86; 1878, vol. 2, p. 70.

6. Newberry, *Beni Hasan*, vol. 2, pl. 13.

7. The two rods are no doubt a rod heddle and a shed stick, and a sword beater is held in the weaver's hand.

8. A similar perforated rod is also used on some vertical mat looms, e.g., on the mat looms of Lake Hule in Palestine and on some from Ceylon and Hong Kong described by Ling Roth, *Studies in Primitive Looms*, pp. 118-119.

9. It is also called the "chair," because the warp sits on it.

10. *Kahun*, p. 29, Ling Roth, *Ancient Egyptian Looms*, p. 21, fig. 24.

11. Ling Roth, *Ancient Egyptian and Greek Looms*, p. 7.

12. The holed beater is called either *madrub* (beater) or *misht* (comb-reed).

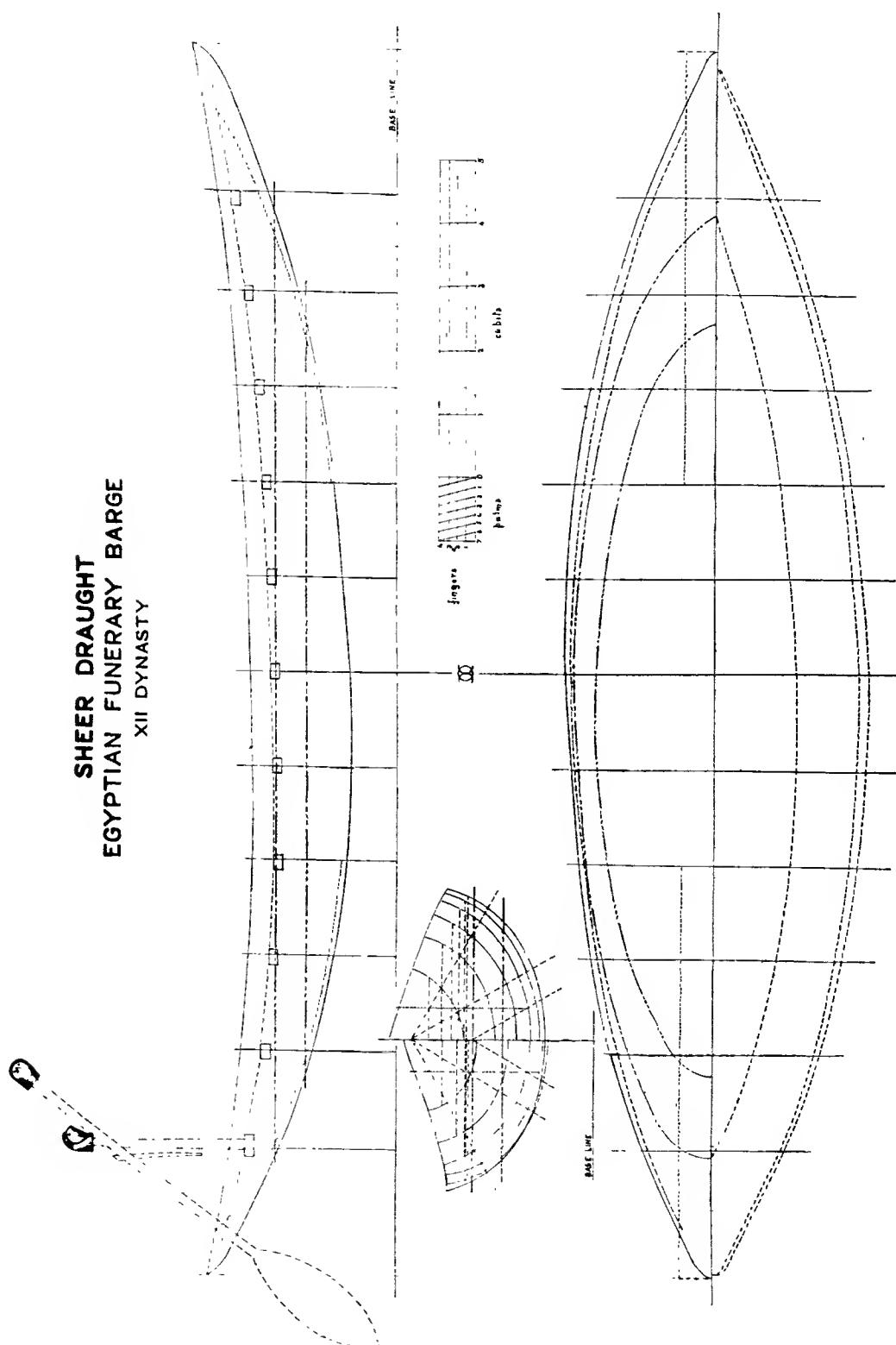


FIG. I. LINES OF MODEL FUNERARY BARGE.

ANCIENT EGYPTIAN SHIP DESIGN ; BASED ON A CRITICAL
ANALYSIS OF THE XIITH DYNASTY BARGE.

THE Ancient Egyptian shipbuilder built his ship without any framing. This is a fact that is beyond doubt. No framing of any kind, other than cross beams, is indicated in any drawing, nor is there any in the boats which have survived ; further, Herodotus (ii, 96) makes a special note of this feature. It was not that the Egyptian did not understand the use of frame work, since models show that he constructed ship's cabins on a framed structure ; No. 4918 in the Cairo Museum is an excellent example. The reason for the lack of framing was that the shape of his vessel made its use unnecessary.

Provided that certain conditions are fulfilled, a ship will keep its shape without the assistance of a rigid frame. When a vessel is afloat the water is pressing normally against the skin of the hull with a pressure proportional to the depth below the surface of the water. Suppose that the ship is turned over, the pressure then acts downwards, and the hull becomes analogous to an arch or a dome. A brickwork arch will stand up under a load if its curvature is such that the forces lie along the arch : the exact curve depends on the loading. In the same way the hull of a ship may be looked on as an arch under a definite load. It is quite possible to calculate the curvature which must be given to the bottom of a ship, so that it shall retain this shape under any particular loading. Generally, the forces will be the pressure of the water upwards (this represents the load on an arch) and the weight of the hull itself. This latter has no exact equivalent in an arch, as the weight of the bricks acts in the same direction as the load, whereas in a ship the weight of the hull acts against the load. It is best then to combine the weight of the planking with the water pressure and thus obtain a modified load. In an arch the total load is carried by the piers, which are subject to a side thrust arising from the tendency of an arch to spread. A ship has beams which supply the necessary support against spreading. A load placed on the deck will be transmitted to the skin planking at the ends of the beams ; and it is this load which supplies the equivalent to the support given by the piers of an arch. Just as the piers push up against the load on the arch, so does a deck load push down against the upthrust of the water.

A ship being hollow, there is every inducement to place cargo inside. When this is done, the load acts directly on the skin of the ship, and to deal with this by mathematics involves considering every possible arrangement of the cargo and subtracting its effect from the upthrust. This was the method suggested for dealing with the weight of the plank. Applied to the cargo, the shape of the hull would have to be different for every cargo carried. In modern ships the weight of the cargo is carried by the frames, which are sufficiently rigid to prevent distortion of the skin plating. That, at least, is the idea in theory : actually a badly stowed cargo does sometimes strain a ship and cause it to alter shape. Cases of such alteration of shape have been known to be so severe as to break the ship.

It is most unlikely that the ancient Egyptian stevedore ever put a cargo *inside* a ship; it would have caused so many leaks in the hull as to be ruined by water. The ancient Egyptian pictures always show the cargo stowed on deck; although this may have been conventional, it is much more likely that it was a representation of actual fact. In the Deir-el-Bahari pictures of the Punt expedition a bill of lading is given, so there is no need for any conventional device to show that the cargo was on board.

Given a deck load, the ship becomes a form of arch and one shape of hull will suit practically any lading, or none. A framework is consequently no more necessary to such a ship than it is to a brick arch. Another point in connection with this is that the bottom is always in compression, and short pieces of wood are not detrimental to the strength of the hull. Under a load the water pressure would cause the planks to open inwards, hence, as Herodotus says, the Egyptian ships were caulked from within.

The foregoing argument leads to the conclusion that Egyptian ships must *all* have had more or less the same shape; at least all those that were *built* of wood. With no framing, it would have been impossible for the Egyptian shipwright to settle the shape by eye, except perhaps in the case of the smallest boats. It may be taken for granted that he had definite rules by which he determined the shape of a vessel. Possibly these rules were traditional and constituted "the mystery of shipwrightry." They were probably never written down, and may be completely lost.

As stated above, the general shape of an Egyptian ship was the same, no matter for what purpose she was used; it is probable that the only variations were in the ratio of length over all to maximum breadth. These are the only two dimensions which are ever given in any records. In consequence, the XIIth dynasty funeral barges which have survived may be taken as typical of an Egyptian ship. Permission was obtained from the Science Museum at South Kensington to take off the lines of the model there of the funerary barge in the Cairo Museum. This model is one-tenth the size of the original.

The result is shown in fig. 1. The scale attached gives cubits, palms and fingers for the original.

These lines were analysed mathematically to see whether a set of rules could be evolved by which the ship could have been built, given only the length and breadth. The result was extremely interesting; it was found that rules, well within the capabilities of the Egyptians, were obtainable; and that these rules agree with all known facts concerning Egyptian ships and can be applied to any size. In fact, using these rules a design for Hatsepsut's obelisk lighter can be made which agrees remarkably well with the Deir el Bahari carvings. Moreover, the design is a practicable one which would not have broken down under a 700-ton deck load.

It is not claimed that these rules were actually in use in Egypt, but some similar method must have been used.

Before discussing the shape of the ship, it should be noted that the Egyptians were familiar with the use of squared papyrus for drawing plans; they could and did work to scale. Further more, they used ordinates set up from a base to define a curve.

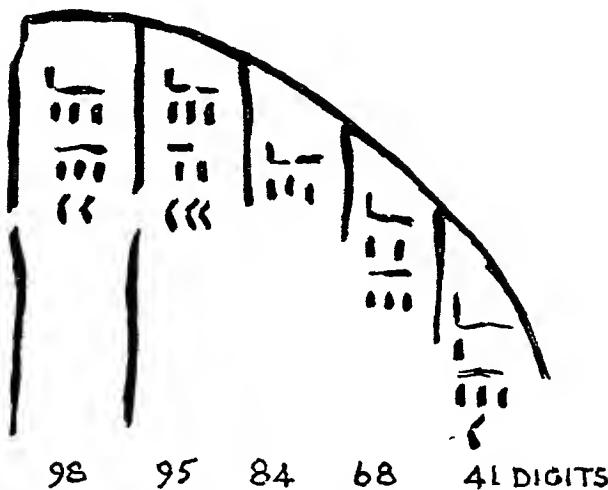


FIG. 2. EGYPTIAN DRAWING OF SETTING OUT A CURVE BY ORDINATES.

There is an ostrakon, probably of the IIIrd dynasty, from Saqqâra which shows a curve defined by ordinates (Somers Clark and Engelbach, *Ancient Egyptian Masonry*, p. 52); and fig. 2 reproduces this curve with the height of the ordinates reduced to fingers. The spacing between the ordinates is not stated; but a simple calculation shows that if a quadrant of a circle of radius 9 cubits 1 finger (or 253 fingers) be drawn, and a line parallel to the base and at a distance of 155 fingers, then ordinates spaced 40 fingers apart agree with those of the ostrakon.

Tabulating the results:—

Height of ordinate of arc of circle as calculated .. 98 94.8 85.0 67.7 41.0 0
Height given on ostrakon 98 95 84 68 41.0 0

If the calculated heights are brought to the nearest whole number, the agreement is exact save for the middle ordinate where the error of 1 is probably due to careless measuring on the part of the original draughtsman or to a clerical error, in writing 3 cubits instead of 3 cubits 1 finger. Any other spacing of the ordinates than 40 fingers converts the curve from a circle to an ellipse, but does not affect the height of the ordinates.

As early as the IIIrd dynasty, therefore, the Egyptian draughtsman was deriving curves from a circle, and defining them by means of spaced ordinates.

The principal curves of a ship are three in number: the profile or curvature of the keel, the plan of the deck, and the shape of the midship section. These give the greatest sections in three planes at right angles. When the ancient naval architect had determined on these three curves, he could give the dimensions of them to the shipwright who was able to fill in the rest by a known formula.

The figures for the South Kensington model barge, which are quoted in inches, must be multiplied by 10 for the model in the Cairo Museum.

The overall length is $39\frac{7}{8}$ inches and the greatest width is $9\frac{3}{4}$ inches—a proportion of 4.09 to 1; that is, the length is practically four times the maximum width. The depth from the top of the gunwale is 3.21 inches, or almost exactly

one-third of the greatest width. It may, therefore, be taken that the general dimensions of a Middle Kingdom ship were: beam, a quarter of the length; depth, one-third of the beam. The latter proportion was probably constant for all types of vessels, but the length to breadth ratio was varied according to the purpose for which the ship was designed, cargo boats having a ratio of 3 or less, whilst in warships and passenger vessels it was 4 or over.

The greatest width would not have been a practicable measurement to give to the shipwright; he would determine the shape of the ship by setting up the cross beams at known positions and measuring the length of each beam.

In the model the distance of the top of the central beam below the top of the gunwale is .65 inches. If the depth of the ship is taken as exactly one-third of the beam, that is to say, 3.25 inches, it will be seen that the beam has been set down *exactly* one-fifth of the total depth. The overall length of the central beam is 9.35 inches, or 95.9 per cent. of the maximum width. In other words, the beam length can be obtained by shortening up the greatest width by 4 per cent. or one-twenty-fifth.

These proportions ($\frac{1}{4}$; $\frac{1}{3}$; $\frac{1}{5}$; and $\frac{1}{25}$) are too obvious to be mere chance; there is a strong presumption that they were standard ratios for design.

In fig. 3 is shown a very simple way in which the length of the main beam may be derived from the greatest width. A base line is drawn and $\frac{4}{5}$ of the half-breadth of the ship is marked off (AB). A perpendicular (AC) is set up equal to the depth from the keel to the gunwale; at this height a line parallel to the base is drawn and on this half the greatest width is marked off (CD). The two points on the horizontal lines are joined (BD). At a distance equal to $\frac{1}{5}$ of the depth, measured from the top, another horizontal line is drawn repre-

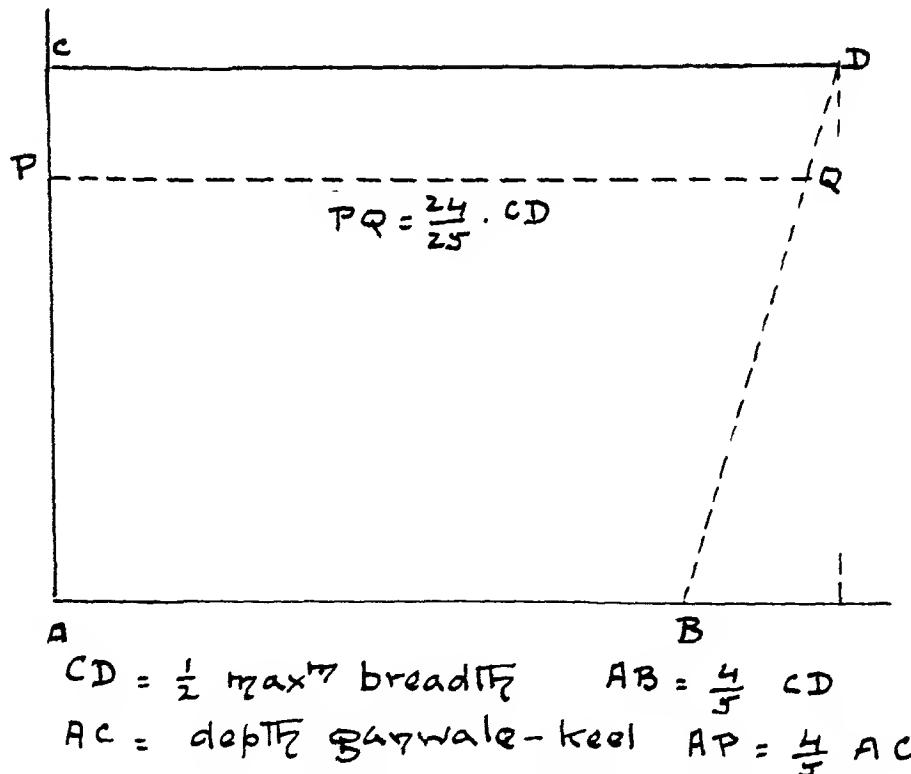


FIG. 3. SETTING OUT PROPORTIONS OF MAIN BEAM SECTION.

senting the beam, and the distance (PQ) from the perpendicular to the sloping line is the required half length of the main beam. The proof is obvious ; by similar triangles the shortening is $\frac{1}{3}$ of $\frac{1}{3}$ of the full length.

The shape of the midship section in the model barge was compared with various possible curves, and it was found that the involute of a circle was the mathematical curve which agreed best with the actual section. The involute is obtained by unwinding a cord from a circle as shown in fig. 4. The radius of this circle is 3.879 inches, or almost exactly $\frac{4}{3}$ of the half width at the gunwale. The coincidence here hardly seems to have been accidental. It agrees too well with the other proportions.

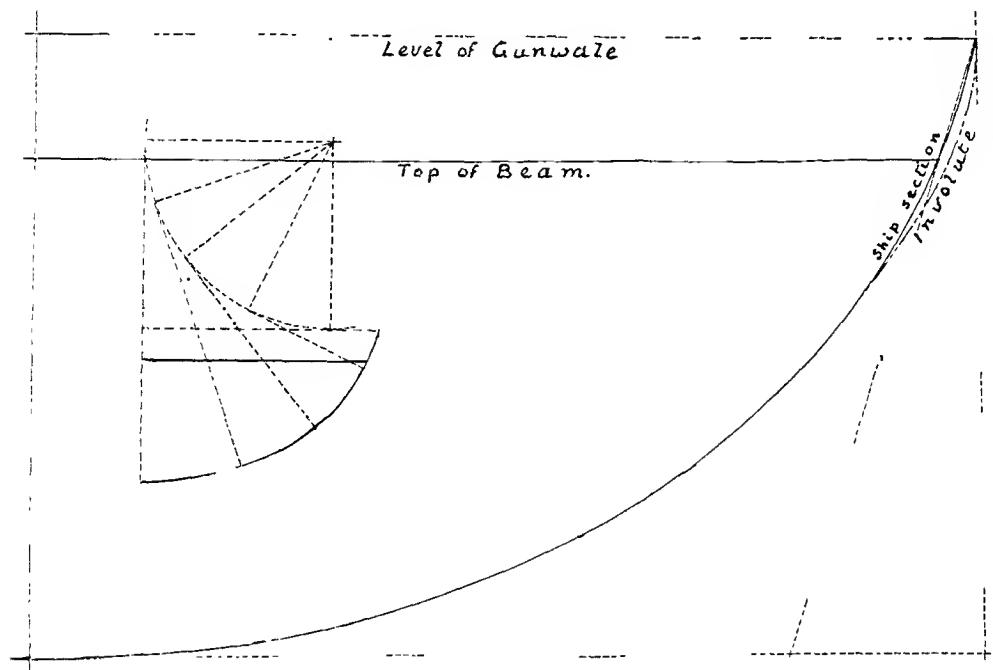


FIG. 4. MIDSHIP SECTION OF FUNERARY BARGE OF XIIth DYNASTY (CAIRO MUSEUM). HALF WIDTH, 48.75 INS. HALF BEAM, 46.75 INS. DEPTH: GUNWALE TO KEEL, 32.1 INS.; GUNWALE TO TOP OF BEAM, 6.5 INS. METHOD OF DRAWING INVOLUTE; RADIUS OF GENERATING CIRCLE, 38.79 INS.

In order to show how the shape of the section, as taken from the model, compares with a true involute, calculations have been made at various points, and measurements taken to correspond. The results are tabulated—

Distance of ordinate from centre line	..	0.00	5.686	1.140	1.7243	2.1681	2.8285	3.3887	3.9299	4.3563	4.6704	4.8153	4.875
Calculated depth of involute below line through top of gunwale	..	3.21	3.1868	3.1147	2.9995	2.8486	2.561	2.2257	1.7369	1.2473	0.7852	0.3984	0.000
Depth of section as measured from drawing	..	3.21	3.185	3.13	3.00	2.855	2.565	2.22	1.715	1.235	0.66	0.235	0.00

The agreement is remarkable, though the mathematical curve is rather fuller at the side than is the model, as is apparent in the drawing (fig. 4).

There is, however, an objection in theory to the section being an involute of a circle. The curve called for by treating the section as an arch, and assuming that the cargo was all carried on deck, is a curve which lies well inside the involute.

The length of the curve from the keel to the gunwale is calculated to be 6.351 inches, or 5.671 to the top of the beam.

How the shipbuilder arrived at the shape of the midship section can only be guessed at. It is quite certain that he did not set up a quadrant and sweep out a full-sized involute by unwrapping a cord. With a ship of any size this method would have been so clumsy as to be impracticable. He had the length of the midship beam and he knew its height above the keel. He would want to know how many planks he would have to build into each side; that is, he required the girth of his ship to the top of the beam. The gunwale was put on last, after the ship was otherwise complete. The tomb of Ti in the Vth dynasty shows this. The Beni-hasan tombs of the XIIth dynasty show that ships were built up in the middle first and extended to the ends. The designer may have drawn an involute and measured the length of the line, but this is considered improbable. He knew from experience that the girth bore a certain ratio to the length of the midship beam. In the model this ratio is $\frac{5.671}{4.675}$ or 1.213, say $1\frac{1}{4}$ or $\frac{5}{4}$, a proportion which seems to occur too often to be quite accidental.

Knowing the girth, the shipbuilder measured off the length on a piece of rope, and hung it between two posts, so that the bight of the rope just touched the underside of the keel. The ends of the rope would be outside the ends of the beam. He then filled the rope with planking, crossed the ends over, and screwed them up until the planking came into the ends of the beam (fig. 5).

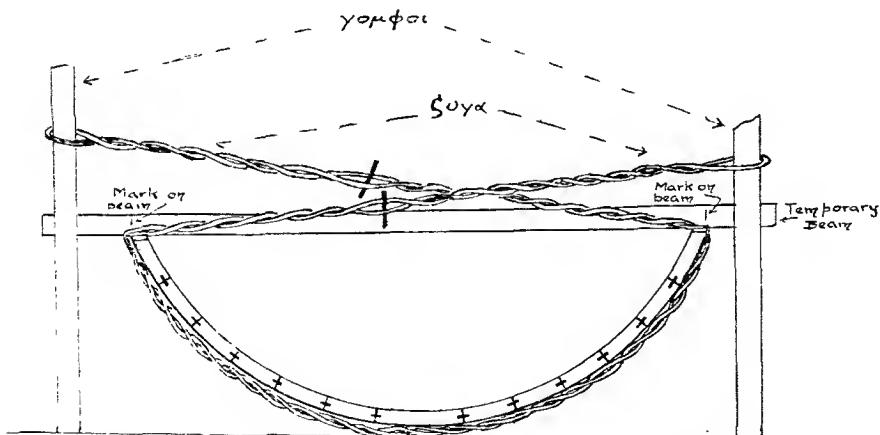


FIG. 5. BOAT BUILDING ACCORDING TO HERODOTUS.

This method agrees with Herodotus' description (see note at end). The act of twisting up the rope would cause the planking to approximate to an involute, since the tension of the rope, owing to friction, would increase according to the distance from the keel, causing the normal pressure to increase with the angle turned through, conditions which are fulfilled by an involute.

The other information the designer had to give to the ship-builder was the length of each beam and the spacing. Also he had to supply the curvature

of the keel, and the amounts the end beams were to be lifted above the centre beams.

The spacing of the beams in the model is 3·1 inches, this being increased to 3·2 inches for the end beams. There are eleven beams altogether, five on each side of the centre. Calculations were made for various curves in order to find if there was any simple curve that would fit the actual lengths. It is obvious that the half length of the beam must be used, so that the curve can be measured from a straight line along the centre of the ship.

One curve that fits fairly well is the arc of an ellipse obtained in the following way. The length of the centre beam has been found as already shown. Using the whole length of the beam as radius, draw a quadrant of a circle, divide the base into 7 equal parts, and set up ordinates. At half the radius draw a line parallel to the base, the length of each ordinate above this line is the length of the half beam. It is clear that when the ordinates are extended the curve becomes an ellipse. It will be remembered that the ordinates shown on the ostrakon were lengths above a chord of a circle.

There is another curve which gives even closer results. Draw a quadrant as before, but using the half beam as radius instead of the whole beam; divide the base into seven equal parts, and also divide the arc of the quadrant into seven parts. Join corresponding divisions; that is, join the first point on the base to the first point on the arc, the second point on the base to the second point on the arc, and so on until five lengths are obtained. Each of these lines gives the length of a half beam. These lengths have been calculated to avoid errors in drawing and the results are tabulated below—

Position of beam.	Midship.	5 or 7	4 or 8	3 or 9	2 or 10	1 or 11
Length of $\frac{1}{2}$ beam as { for ^d . measured.. . . aft.	4·68	4·56 4·53	4·27 4·22	3·77 3·80	3·10 3·12	2·05 2·12
Calculated length for ellipse	4·68	4·585	4·289	3·775	3·00	1·87
Calculated length for other curve	4·68	4·577	4·273	3·771	3·09	2·21

The second curve, which will be referred to as "the beam curve," gives remarkable agreement. The ellipse is rather fuller. The drawing (fig. 6) shows the actual curve, and also the method of obtaining the two curves. The fore end of the model is shown.

To discover a curve to suit the keel was not so easy. It is to be noted that the model is slightly unfair, in that it is visibly flattened at the position of maximum depth; it is also probable that the original ship had become distorted. In order to analyse the curve, it is necessary to work from a base line that is independent of the trim of the boat. The line that has been selected is that joining the end beams. This is one that could easily be used in practice. It was found that an elliptic arc could be drawn to fit each end of the ship; but the generating circles, from which to project the ellipses, were widely different, and the radius of neither bore any relation to the length of the midship beam. The beam curve also failed to produce any curve which agreed with the actual curve of the keel. Another method had to be tried. The distance from the top of each beam to the bottom

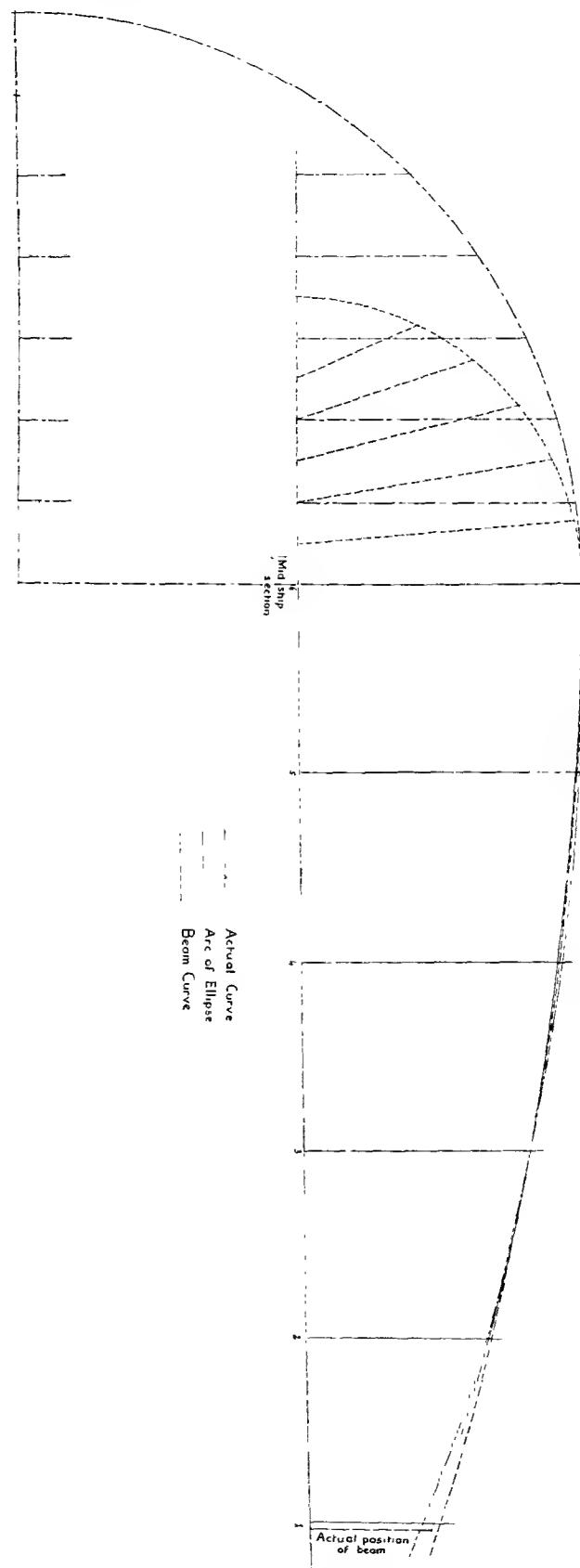


FIG. 6. COMPARISON OF HALF-BEAM LENGTHS WITH ELLIPTIC ARC, AND "BEAM" CURVE.

of the keel was measured and compared with the length of the corresponding half-beam. It was found that the ratio was nearly constant for the seven central beams, and decreased at the ends.

To use these depths it is necessary to know how far the top of each beam is below the line joining the end beams, that is, the sheer of the deck. The depth of each beam in the model, from the upper to the under face, is $\frac{5}{16}$ of an inch. This measurement is used as a unit.

The results obtained are shown in the table that follows.

Column *A* is the length of the half-beam as obtained from the "beam" curve. Column *B* is the ratio of depth to half-beam, the fractions being expressed in the Egyptian manner. Column *C* gives the depth from the top of the beam to the underside of the keel, obtained by multiplying *A* by *B*. The figures in brackets are the measurements taken from the model. In column *D* is shown the depth of each beam below the line. These distances as multiples of the beam thickness ($\frac{5}{16}$ inch) are shown in column *E*. The figures in brackets in column *D* are the actual measurements obtained from the drawing of the model. In making the drawing (fig. 1), a base line below the keel was used to build up the plans, but this line did not agree with the line joining the end beams—there was a difference of level of .44 inches. Columns *F* and *G* show the designed and actual measurements, corrections for difference of level having been allowed.

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>
	Half-beam by curve.	Fraction ratio.	Depth beam to keel.	Depth of beam below line.	No of beam depths	Depth of keel below line by rule.	Depth of keel below line as measured.	Error.
Fore end	2.21	$\frac{1}{2} + \frac{1}{16}$	1.160 (1.16)	0	—	1.160	1.16	0
	3.09	$\frac{1}{2} + \frac{1}{20}$	1.700 (1.77)	.3906 (.3848)	1 $\frac{1}{4}$	2.0906	2.1548	-.0642
	3.771	$\frac{1}{2} + \frac{1}{15}$	2.136 (2.17)	.7031 (.7011)	2 $\frac{1}{4}$	2.8391	2.8711	-.0320
	4.237	$\frac{1}{2} + \frac{1}{15}$	2.421 (2.41)	.8594 (.8474)	2 $\frac{3}{4}$	3.2804	3.2574	+.0230
	4.577	$\frac{1}{2} + \frac{1}{15}$	2.593 (2.51)	.9375 (.9837)	3	3.5305	3.4937	+.0368
	4.68	$\frac{1}{2} + \frac{1}{15}$	2.652 (2.56)	1.0156 (1.0600)	3 $\frac{1}{4}$	3.6676	3.62	+.0476
	4.577	$\frac{1}{2} + \frac{1}{15}$	2.593 (2.61)	1.0937 (1.0662)	3 $\frac{1}{2}$	3.6867	3.6763	+.0104
	4.273	$\frac{1}{2} + \frac{1}{15}$	2.421 (2.48)	1.0937 (1.0226)	3 $\frac{1}{2}$	3.5147	3.5026	+.0121
	3.771	$\frac{1}{2} + \frac{1}{15}$	2.136 (2.10)	.9375 (.9789)	3	3.0735	3.0789	-.0054
	3.09	$\frac{1}{2} + \frac{1}{30}$	1.645 (1.64)	.5868 (.5752)	1 $\frac{3}{4}$	2.2318	2.2152	+.0166
Aft end	2.21	$\frac{1}{2} + \frac{1}{16}$	1.141 (1.14)	0	—	1.141	1.14	0

Column *F* is, of course, the sum of *C* and *D*. Column *H* shows the error, the \pm sign meaning that the point obtained by rule is below the actual point. It is interesting to note that the error of -04 at the midship section is the exact amount that requires to be added to the actual depth of the model from gunwale to keel to make the ratio of breadth to depth *exactly* 3 : 1.

The table hardly needs further comment. The fractional depth ratio is exceedingly simple. The drop of the beams below the straight line shows a constantly increasing difference from the centre to the ends. Expressed in $\frac{1}{4}$ -beam thickness, the series of differences is as follows: Aft—7. 5. 2. 0. 1. 1. 1. 2. 4. 5.—forward.

Summarising these rules the process of design is quite simple. The information given was the overall length and the width at the gunwale.

Divide the width by 3; this is the depth from gunwale to keel. Set down $\frac{1}{5}$ of the depth to get top of midship beam; deduct $\frac{1}{25}$ of greatest width to get the length of the midship beam.

Take $\frac{1}{3}$ of the length of the midship beam to get the girth of planking from the top of beam to top of beam at the midship section. Use the length of the half-beam as a radius and two more spaces than exist—that is, 7 instead of 5—and draw a beam curve to get the lengths of the remaining beams. This was all the information that needed to be given to the builder.

The builder knew the spacing of his beams; he set up the two end ones at a convenient height, and stretched a cord between them. He then set down by rule so many $\frac{1}{4}$ -beam thicknesses, and thus got his remaining beams. He then measured down a fraction of the length of each beam and obtained the shape of his keel. By using ropes hung up he could get his planking width and pull it in to fit his beams, the length of rope determining the amount of plank he needed for the bottom. Finally, he filled in the deck between the beams and fitted the gunwales.

As an exercise, a design for Hatshepsut's obelisk lighter was got out based on these rules. The lighter was taken as 180 cubits by 60. This gave a depth of 20 cubits. The final result compared strikingly with the Deir el Bahari carving. The total displacement with the obelisks worked out at 1,471 tons.

It may be mentioned that this proves the Egyptians to have made these carvings to scale. The size is $\frac{1}{5}$, or 1 palm equals 5 cubits. This can be checked by taking the length of the after obelisk; using this scale the length works out at 97 feet, which is known to be the length of the surviving obelisk.

In a similar way, if the scale—1 palm equals 2 cubits (or $\frac{1}{4}$)—is used for the ships of the Punt expedition, it will be found that the distance between the oar loops is 3 feet 9 inches, just a convenient space in which to work an oar.

C. D. JARRETT BELL, R.C.N.C. (retd.).

NOTE FROM HERODOTUS.

The key sentence is as follows:—

... περὶ γόμφους πυκνοὺς καὶ μακροὺς περιείρουσι τα διπίγχεα ξυλα· ἐπεὰν δὲ τῷ τρύπῳ τούτῳ ναυπηγήσωνται, ξυγὰ ἐπιπολῆς τείνουσι ἀντῶν—νομεῦσι δὲ οὐδέν χρέωνται . . .

Translated: . . . “About stakes firm and long,¹ the two cubit planks are arranged in a curve;² then in this way ship construction is carried on, girths are stretched on the outside.³ Frames are not necessary. . . .”

Comments :—

1. *γομφοι* were probably stout upright posts driven into the ground to give the outline of the ship. These posts supported the beams.

2. The planking was arranged to follow the curve set out by the posts.

3. *ξυγὰ ἐπιπολῆς τείνοντι αὐτῶν* can also be rendered “beams are laid across the top.” As this would have been a common feature of Greek ships it hardly seems worthy of note by Herodotus; if *ξυγὰ* is taken as a strap, Herodotus seems to be trying to explain that the Egyptians hung their planks in ropes (fig. 5), as they had no framing to give the shape.

PRIMITIVE ASTRONOMY.

IN modern times we are so accustomed to use instruments for observations that we hardly realise how results could be obtained before artificial means were introduced. Even in Roman times the latitude was deduced from the length of the longest day measured by a water clock. As the laws of refraction were unknown, the results of calculation gave too low a latitude; without accurate division of time, the refraction raising the sun's image could not be detected by the length of the day. No arc with degrees for angular measurements was yet invented, and the astronomy of the Egyptians, Babylonians, and Greeks deduced angles indirectly from chords, if at all.

The nearest approach anciently to angular measurement was in the concave sundial, divided into hours on its spheric surface. Hipparchus probably measured his degrees on the sky by observing subtended angles on straight scales, for Ptolemy, his successor, calculated a table of chords of angles, which would be fruitless if divided circles were in use. The divided arc of the astrolabe was a Byzantine, or, rather, Mesopotamian, invention, first described in the VIIth century; it was adopted by the Arabs and introduced into the West in the Middle Ages.

The recording of time is perhaps the most elementary matter. This was done in Egypt by cutting notches as a tally on a stick, and in Italy the years were marked by a priest driving a fresh nail into the doorpost of the temple. A late elaboration was the cutting of three rows of ten holes in a piece of wood, and shifting a peg every day of the month. The divisions of the day are marked by the Egyptian peasant of to-day by putting a stick upright in the ground, and marking where its shadow falls. It seems probable that the scientific Egyptians of the early pyramid age had used the pendulum for time division, by the cubit of land measure, 29.157 inches, swinging 100,000 times in the day.

The number of days in the year is found by the days elapsing until the sun rises again in the same direction; this is best observed at the Equinox when its position shifts nearly a degree every day. Thus the $365\frac{1}{4}$ days would be ascertained by four years' count, but the remaining error of $1/120$ th of a day could not be found till 120 years had elapsed. We now keep it nearly right by omitting leap year three times in every four centuries.

The moon's period, though so obvious, is not accurately found by looking for the new moon at sunset, as in the old Semitic method preserved by Islam. It would be accurately found by the lunations and days between eclipses, which was probably the Babylonian method.

The hour angle between different stars would be first found by the days that elapsed between their risings, most precisely at the equator: division by 365 would naturally lead to dividing the circle into 360° . The division of the year into lunar months would produce 12 sectors of 30° , and this led to dividing the day into 12 hours.

The days counting from new moon are readily seen in the extent of illumination of the moon, for the six grades in each quarter are easily distinguished. The hour of night can be read by estimating at what hour of day the sun would be in the position of the moon, and then adding on the hours of illumination of the disc. This counting of days after the new moon naturally led to counting the days of the waning moon before new moon, and hence the Roman numbering of days backward in the second half of the month.

The polar stars, always visible above the horizon, greatly interested the Egyptians, who prayed the sky goddess to keep their souls with the undying stars. So soon as direction was closely observed, it would be found that no star kept exactly to the same place. Thus true north would be found midway between the two extreme positions of any star near the pole.

By hanging up a high plumb line, say 10 feet, the observation would be at 15 feet distance in Egypt. A line could be observed through a narrow slit to within $1/50$ th inch, or $20''$ of angle from the plumb line, a smaller amount than the error of any building known. I have in practice followed this method in finding the true north.

The most accurate observation of a star being on the meridian would be by a cord stretched true north and south, above a pool of water about 20 feet below; by noting the instant of the reflection of the star and cord being seen when looking past the cord, a very accurate observation could be made. There is ground for supposing that the long trenches lying north to south at the east of Khufu's pyramid were intended for such observation. These trenches were lined with large blocks of stone which would reduce the width to only a few feet.

The precessional movement of the earth's pole, deviating to different stars in the course of centuries, would need long observations to notice or ascertain. More accurate observation could be made by observing the change in the direction of stars at rising or setting; but the cycle of 25,800 years would be impressed on man by the sunrise at the equinox being in different constellations.

The size of the earth was first ascertained with fair accuracy by noting that the sun was vertical on the longest day at Aswan, but the shadow was about 7° from the vertical at Alexandria: by a happy chance, the result was much more accurate than might have been expected.

We see how much could be done in observation without any apparatus but a piece of string. The main difficulty was in measuring time, and if the early dynasties knew the pendulum the use of it was certainly lost in after ages. The different forms of water dropping or flowing, as a clepsydra, are too vague for any exact result, and this held man back from any exact knowledge or record except that of eclipses.

FLINDERS PETRIE.

A NOTE ON AN ALLEGED RESEMBLANCE BETWEEN DEFORMED SKULLS OF THE CAUCASUS REGION AND THE HEADS OF EL AMARNA.

IN *Ancient Egypt and the East*, 1933, pp. 29-35, Prof. V. A. Avdiev records the finding of certain artificially deformed skulls in Russia, the Caucasus, Armenia and various parts of Asia Minor, and draws attention to the supposed likeness between a skull from the Kabarda-Balkaria region, of which he gives a figure, and the heads of Akhenaten and his family, who he believes may have been subject to a similar process of distortion.

The theory of the deformation of skulls at El Amarna was proved to be false at least six years ago, but seeing that it has again been brought forward, it may be useful to recapitulate the points of the discussion that then took place.

The occasion was the finding of an artificially deformed skull of a girl by Dr. L. Gatineau in a Coptic cemetery of the Vth century A.D. at Medall, near Fachn in Upper Egypt. The skull is now exhibited in the Royal College of Surgeons, together with a wax model believed to represent the appearance of the head in life.

Dr. Gatineau passed on the skull to Dr. G. P. G. Sobhy for examination, and Dr. Sobhy's report appeared in the *Bulletin de l'Institut français d'Archéologie Orientale*, t. xiv, 1918, pp. 65-67, under the title "Description d'un Crâne trouvé dans une Tombe à Tel el Amarna." Photographs were appended and measurements given, and the writer recorded his opinion that the head belonged incontestably to one of the family of Akhenaten, with the portraits of which he found it to agree.

In the *Journal of Egyptian Archaeology*, vol. IX, 1923, p. 117, a note is recorded from Dr. Sobhy stating that he had been misinformed, and that Dr. Derry had pointed out that the head was from Medall, not Amarna, and was of the Vth century A.D. Nevertheless, in 1927¹ Mr. Warren R. Dawson revived the attribution of the skull to Amarna and made interesting deductions from it as to the heliocentric track of the custom of head-deformation, which probably originated in Egypt in the XIVth century B.C. A few weeks later² he acknowledged his mistake as to provenance, but adhered tentatively to the theory of the deformation custom in Egypt.

A communication then appeared from Dr. D. E. Derry³ which would seem to put the whole question to rest. He pointed out that Dr. Gatineau's wax model which looks so like a princess of Amarna does not follow the contours of the Medall skull, and that the shape of this skull is long, narrow and high, whereas the Amarna statues and the two known skulls of the period represent wide flat heads. He further stated that among many thousands of skulls examined by him belonging to all periods, not a single case of artificial deformation of the head was found, and his conclusion is that the custom did not originate in Egypt and was never practised there. The particular skull in question is probably that of a visitor from the Caucasus.

A comparison between the skull figured in *Ancient Egypt and the East*, p. 34, and the head of an Amarna princess will show the absence of true resemblance. Skulls whose contours are to be compared must be placed in the same relative position, and for this purpose the "Frankfort plane" is almost universally adopted; that is, the skull is so poised that a line drawn touching the upper margin of the external auditory meatus and the lower margin of the orbit is horizontal. If the Kabarda-Balkaria skull is placed in this position the dome appears even higher and more vertical, with extreme shortening of the occipital region (fig. 1), while the head of the princess (figs. 2 and 3, Berlin 21223) is wide and comparatively flat, with no diameter reduced at the expense of another—a condition which must result in artificial deformation. In short, it would be hard to find two heads more completely unlike.

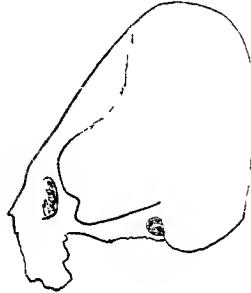


FIG. 1.



FIG. 2.



FIG. 3.

Thus we are compelled to disregard what might have been a striking piece of evidence of the connection between Ancient Egypt and the Caucasus.

EDITH M. GUEST.

REFERENCES.

1. *Lancet*, Nov. 5th, 1927, p. 1001.
2. *Ib.*, Nov. 26th, 1927, p. 1166.
3. *Ib.*, Dec. 12th, 1927, p. 1376.

REVIEWS

Le "Cœur" dans les Textes Égyptiens depuis l'Ancien jusqu'à la fin du Nouvel Empire. Par ALEXANDRE PIAKOFF. Geuthner, Paris, 1930, pp. 128.

The most important part of this book is the first chapter, which is a well-documented attempt to differentiate the *ib* and the *h̄ti*. The *h̄ti* seems to be "that which is in front," both as to position and importance of function. Both words appear in the Pyramid Texts, but the writer thinks, without giving any definite reasons, that *h̄ti* is of slightly later origin, though it continues into Coptic as *ΣHT*, while *ib* is lost. He believes *h̄ti* to indicate the physical heart, as it clearly does in the M.K. scenes of butchery; for in the P.T. the *h̄ti* is torn out or eaten or entrusted to Sehmet. On the other hand Horus carries the *ib* to Isis, and the deceased is given possession of his *ib*. Moreover, with the verbs *in* and *iri*, *ib* is always used, while *di* takes both words in an apparently synonymous sense. Hence the writer's general rule that the *h̄ti* is physical and that *ib* is used in a metaphysical sense denoting such qualities as courage, is replete with exceptions. The two words are next studied in the Medical texts, where a similar lack of precision is found, though the author believes the same general distinction to hold. It would, however, be surprising to find precision of terms amidst so much confusion as to anatomy and physiology. The physician is said to recognize the movements of the *h̄ti* by feeling the blood-vessels and putting his hand on the place of the *ib*: the *mtw* carry air to the *h̄ti*, which therefore functions as lungs: in certain cases (p. 20) *ib* stands for stomach, and the externalized *h̄ti* of Bata assumes the functions of the digestive organs and absorbs water whereby it lives again. Nevertheless, the author finds himself able to state categorically that the word *h̄ti* is always used where the circulation of the blood is in question. In the literary and religious texts of the M.K. and N.K., *h̄ti* is found to be physical and *ib* figurative, but again by no means consistently. Chapter II is a study of expressions formed with the words for "heart," and these seem to cover almost the whole gamut of human emotions. As the sense is figurative, *ib* is the more frequent word, but the *h̄ti* also is agitated, loves, understands and rejoices. The next chapter, on the heart in religious rites, discusses the relation between the *ib-h̄ti*, *k̄*, *b̄*, and *ḥ*, which are found to be largely parallel. Finally, the heart in metaphysical conceptions is studied, chiefly in respect to the Memphite cosmological philosophy as redacted in the B.M. Stele No. 797, of the VIIIth century B.C., where the world is created by *νοῦς* and *λόγος*, namely, Ptah as the *h̄ti* and tongue of the Ennead. Thus, the precise differentiation of terms which we hoped to find escapes us from beginning to end, but the author may fairly claim to have shown that this is because it was never present in the literature as known to us, and not because that literature has not been adequately examined.

Some of the translations need revision: on p. 49 Ptah's title *rsi inb f* is rendered "celui de la muraille du sud": it should be "he who is south of his wall," in contrast to Neith who in Memphis is "she who is north of the wall", as seen in the title *ḥm ntr Nit mehlt inb* (Mar. Mast. D. 47 and D. 55, L.D. II, 46, etc.). On page 60 *nd* is translated by "venger", a usage now abandoned by most scholars and certainly not indicated here. A few translations of medical terms are offered with a query, but as they are merely verbal translations of the words used, or even guesses, they lead nowhere. On p. 40 "mon cœur" for *ib k* can hardly be more than a slip of the pen, and so perhaps on p. 79 "mon

coeur" for *ib f*; but here a serious alteration of the idea results. As index there is a full list of the expressions quoted, with references. E. M. G.

Methods of Hand Spinning in Egypt and the Sudan. By GRACE M. CROWFOOT. 8vo, 51 pp., 44 pls. 1931. (Bankfield Museum Notes, Second Series, No. 12). 3s.

In this careful study the writer tabulates and describes six main types of spinning, from the simplest and most primitive type of hand spinning, by hand alone, to the highest type—spinning with a suspended spindle—reached before the invention of the wheel. Our knowledge of flax spinning in ancient Egypt is derived from XIIth dynasty tomb pictures and from two tomb models; these clearly show that the method used was the suspended spindle process, with preliminary treatment of the flax by the old hand method. Great skill must have been required for the simultaneous use of two spindles; and three features, all differing from classical and contemporary European practice, namely, the absence of a distaff, the use of the spindle whorl uppermost, and rotation of the spindle by rolling it on the thigh, are of very special interest because they have survived to the present day. The very careful preparation of raw material for spinning went out with the fine linen to whose excellence it contributed, and the dexterity with two spindles has vanished; but to this day the wool spinners of Egypt and the cotton spinners of the Sudan use their spindles whorl uppermost, they roll them on the thigh, and they prefer to spin without a distaff, as do the flax spinners of Egypt. L. B. E.

Anatolia through the Ages. By E. F. SCHMIDT.—The great mound of Alishar is about sixty miles north of Kaisariyeh, in the midst of Asia Minor. In 1927 the work was begun, and portions were worked out in three years. At the base there is an unknown depth of neolithic age. On this is stratum I, where copper first appears. Spindle-wheel types prove a useful series to distinguish periods. Rude idols much like early Danubian products, and a copper seal with diagonal cross design, are the highest class.

To this succeeded an alien people, stratum II. Cuneiform tablets appear, like Cappadocian tablets elsewhere, of early Hittite period. Regular groups of building, large stone jars, finely-shaped pottery with high polish, weird little bronze figures, a pottery model shoe with upturned toe, Hittite seals, ornamented bone work (exactly like that of 2300 B.C. at Gaza), all show a considerable civilisation. Contemporary (and perhaps earlier) is stratum III, which is definitely Early Hittite, distinguished by painted pottery with crossing line patterns and zig-zag.

Stratum IV belongs to the Hittite Empire, contemporary with the XVIIIth dynasty. Henceforward the skulls are typically dolichocephalic. Hitherto hieroglyphic writing, iron, and new styles of pottery mark this period. Geometrical chequer and key fret pattern, with plants and animals, and knee fibulae are also found.

After this there is the Phrygian and Medo-Persian level with sound fibulae, and lastly the Hellenistic and Roman. F. P.

Die Totenliteratur der alten Aegypter. By KURT SETHE. 4to, 24 pp. 1931. (Berlin, Akademie der Wissenschaften.) RM.2.

In this pleasant account of the literature of the dead, Sethe traces the origin of the custom of supplying the deceased with funerary texts (on tomb walls,

coffins, and papyrus rolls) to the example of Unas, the last king of the Vth dynasty, who was the first to have the walls of the inner chamber of his pyramid carved with religious texts, probably as a precaution against neglect. The Pyramid Texts are in the third person, with frequent use of the royal cartouche, though there is evidence that the original texts were composed in the first person. The following explanations of these two paradoxes are offered: (1) the Pharaoh foresaw the violation and exposure of his sanctuary and perpetuated his name in this way; (2) the first person, though unsuitable in itself for an officiating priest, would be suitable for one who impersonated the deceased. L. B. E.

The Tomb of Queen Meryet-Amun at Thebes. By H. E. WINLOCK. Pp. 95, 46 pls. 1932. (Metropolitan Museum, New York.) \$10.00.

This volume is a full and complete account of the excavation of a hitherto unknown royal tomb, and the author is to be congratulated on his double achievement, the actual excavation and the exhaustive record. America lags so far behind the rest of the world in the matter of publication that Mr. Winlock has earned the gratitude of all Egyptologists by producing a volume of scientific accuracy with numerous and adequate illustrations, yet at a cost which is not entirely prohibitive for the ordinary student. The publication has been made within a reasonable time after the discovery, so that the information is in the hands of scholars as quickly as possible; here again is a matter for gratitude.

The book begins with a clear description of the actual tomb, of which there are numerous plans and sections. Then follows the account of the mummy of the queen, an appendix on pp. 83-85 giving the anatomical details and measurements. It is interesting to find that the jewellery which the royal lady wore could be largely reconstructed from the impressions left by the ornaments on the bandages and soft resin, though the objects themselves had been wrenched off by robbers centuries ago. The metal of the jewels was certainly gold, and was the real objective of the thieves. The ornaments consisted of a metal fillet with floral pendants encircling the head, cuff-bracelets of gold and beads on the wrists, similar ornaments on the upper arms close to the shoulder, a large scarab over the heart, and a girdle of shell-shaped and disk beads of lapis lazuli round the waist. The coffins are fully described and illustrated, and much of the funerary furniture has been reconstituted from the fragments which were collected by the excavators with meticulous care from various parts of the tomb. The two robberies of the tomb and the restoration in the nineteenth year of Paynudem I after the second robbery have been carefully worked out, and the rebandaging of the mummy by the priests is given in full detail. An interesting point is the estimated length of time required by the restorers to clear away the disorder left by the robbers, to complete the rebandaging, and to tidy away their own things and leave the tomb, outwardly at least, in good condition; the whole work could, according to Mr. Winlock, have been done in one day.

Mr. Winlock is at his best when dealing with concrete facts; but when he tries his hand at theory the result is not so good. The reconstruction of the scene of the burial of Entiu-ny (in this name the "u" should be omitted, as the meaning is "She who is mine") is unconvincing as it stands, but when the promised volume on this intrusive burial is given to the world Mr. Winlock's reasons for his statements may be made clear. Again the chapter on the relationships of the royal ladies to the contemporary Pharaohs seems to indicate that Mr. Winlock is hampered by the feeling that the Pharaohs, like ourselves, were prevented from marriage within certain degrees of consanguinity. Unless

it is realised that Christian marriage laws are of comparatively recent origin and cannot be applied to the ancients, little progress can be made in the study of Pharaonic relationships. But these defects are not vital to the main import of the volume, which is one of the most valuable records of Egyptian excavation which has appeared in recent years.

M. A. MURRAY.

Excavations at Chandravalli. By M. H. KRISHNA.

This is a most promising opening of scientific research by Indian initiative, due to Mr. Krishna, whose studies in London will be remembered by many. He opens by stating how such research has been neglected in South India, until now, happily, the Mysore Government has advanced the subject in the University of Mysore. The present output is a widely planned piece of work, by sinking search pits and carefully noting results. In one site five floor levels were found, each dated by native coins; the lowest but one had a denarius of Augustus, while below that was a level with iron slag and polished pottery, red with white ornament. Three dozen samples were taken in different parts of this district, each here described. Such work, if carried on with fuller resources, would soon clear up the history of civilization in India.

F.P.

Antiquités Égyptiennes du Musée de Vienne, Isère. By A. VARILLE. 8vo, 18 pp., 4 pls. 1932. (Geuthner.) Frs. 10.

This account begins with a broken stele of Ramessu-em-per-Ra, and a copy of the stele when complete, before 1870. There is also another stele of him at Lyons adoring Hathor. The stele C₇₇ Louvre is of the same type. The same man is known by a stele from Gurob, a stele in the Villa Albani, one from Abydos (*Mariette*, Abydos, II, 50). He was a Syrian, Ban-Matzana of Zerbasana.

There are also described here a canopic jar of Neb-Amen, another nameless, a stone vase and two of pottery from El Khozan, four illegible shauabti, a jackal and a falcon of wood, a mummy named Hor-sa-Asit, two fragments and three animal mummies, two Coptic textile fragments, and two recent vases.

F. P.

Atlas zur Altaegyptischen Kulturgeschichte. Part II. By WALTER WRESZINSKI. Sheets (photographs with key-drawings and appended text). 1932. (Hinrichs, Leipzig.) Reichsmarks.

The appearance of the second part of Professor Wreszinski's *Atlas* marks not only the completion of another stage in this immense undertaking but also an important internal advance on Part I. The photographs are better, the line drawings more numerous and much more accurate, and the text has gained in mastery of the detail involved. It is now easy to set aside one's predilections for a different treatment of the material and to be heartily grateful for the mass of pictorial records which it places in our hands, the guide which it gives to their interpretation, and the hints at what is most valuable in them for historical and cultural research.

In a sense this publication is a temporary makeshift. Most of this material merits, and will some day receive, more elaborate editing. But it is the case of a ninety-nine years lease; the day when the last of the temples of Egypt will have received this attention, though not so far off as the Greek Kalends, is beyond all practical consideration. Nevertheless the near future ought to see the definitive edition of Medinet Habu, and, in my opinion, we might have been spared the purchase in duplicate of this extensive material. No doubt the extra-Egyptological world is being catered for. But who pays the piper ought to call

the tune. We would urge Professor Wreszinski to give strong preference in his future selections to such pictures as are unavailable in any creditable form and likely to remain so for some time. The subjects which are most easily secured are generally those of which we are least in need.

The line drawings, though necessarily often in miniature, allow a rapid survey of the contents of each plate. Where the photographs are too indistinct to serve as a corrective, a careful comparison with trustworthy copies shows that they now reach a commendable degree of exactitude. It is very satisfactory to find that the photographs show no retouching. Manipulated photographs are not to be wholly condemned ; but, in that case, they ought to be characterized as such on the plate itself, for they then fall into a totally different evidential class. Part II deals almost entirely with battle scenes, or the commemoration of military expeditions, and thus presents us with innumerable depictions of the native and mercenary troops of Egypt and of the combatants they met with on foreign soil. It is an enormous gain that the textual commentary on these scenes from various temples and different periods should come from the hand of one man, and he by this time familiar, as none other is, with all the repetitions and all the variations of this particular group of records. Each picture is thus brought into relation with all the others of its kind, and the succinct descriptive text attached to each is worthy therefore of the most serious attention. Even if the author should prove to have some recurring misjudgment, it would be easily eliminated and would not affect the whole. We have thus here all the data for a more difficult study, for which there is no place in this work—the appraisement of the historical and representational value of these battle-scenes.

We need not seriously cavil at so large a part of a *Kulturgeschichte* being occupied by the depiction of brutal and braggart warfare. The foreign wars of Egypt were a unifying force in lands in which the main strength of barbarism lay in the total aversion of the parcelled-out peoples to permanent cohesion and their exposure to continual internecine strife. They could be converted to quietness and higher social standards only at the point of a resistless sword. The effect of conquest was so far a civilizing one, without there being any missionary impulse. That these peoples " did not know Rê " was Egypt's excuse for enforcing servitude, not her incentive. The proportion of mercenary troops in the Egyptian army, no less than the poverty of spirit which the paens of victory exhibit, leaves us with a low estimate of the national ideals. Those who to-day condemn war as wholly insensate and futile take very short views, both backward and forward. Such tirades against natural impulses of mankind, and scorn of the " somehow good " in which they are apt to end, might stutter a little at the discovery that the greatest result of the invasions of Syria by Egypt was that, in the backwaters created by this swirl, the hunger-stricken Hebrew clans crept up, bringing out of the level and unsoiled desert that fierce monotheism which thrives best there, and which in this case had such vitality that it leavened the entire world.

The recoil of these wars upon the Egyptian nation was far from being as salutary as one might have hoped. Gains won by force are apt to be looked on with the gloating eye of a robber, not with the teachable admiration of an equal. Egypt gained immediately the chariot, new weapons, improved military organisation and strategy ; but not the ardour to use them, still less the wit to apply the lessons to civil uses. Chariots, for instance, invited road-making, but did not bring it about ; though swift communications up and down the valley of the Nile might have warded off disunion and invasion. The looting of

Lotnu seems to have resulted mainly in luxury, emasculation, and mental unrest ; for wealth that comes easily is usually squandered, rarely invested in national securities. At any rate, the favourable influences of success did not preponderate or prove lasting. The East was enabled to take a delayed revenge in blow upon blow ; even the beneficent forces of Christianity were perverted in crossing the frontier.

However exact or inexact such an estimate may be, these pictures of war ought to lead us through military and ethnical studies to deeper questions of historical tendency and development. The scenes are, of course, very one-sided. Egypt Abroad in Part II is rightly placed after Egypt at Home in Part I of the *Atlas*, where soldiery has such a restricted rôle among the rural occupations, the crafts; the amusements, the domestic life of thoroughly Egyptian Egypt.

N. DE G. D

The Oriental Institute. By J. H. BREASTED. 8vo, 455 pp., 2 pls., 207 figs. 1933. (University of Chicago and Cambridge University Press.) 22s.

This volume outlines the prodigious scheme of research in the East planned and started by Prof. Breasted. It is written with a view to instructing the American public as to the meaning, the means, and the purposes of these new developments.

The organization occupies a quarter of the book, the Egyptian work one quarter, the Asiatic work over another quarter, and the remainder is on the publication department. Here we can only note the expeditions.

In Egypt there is first the prehistoric survey, which grew on the British School work by Dr. Sandford, and has cleared up the general course of that age. At Memphis some years of work are planned on copying the early mastabas. In the Cairo Museum a large enterprise of copying and publishing all the magical texts on early coffins has been brought to the final stage of planning the publication. At Medinet Habu the architectural survey has been active in the clearing of the temple and copying especially the great naval battle scenes of European importance ; the great volumes of this work are one of the most splendid but reasonable issues of editing. The Abydos expedition has also undertaken a great task in copying the temple of Sety.

In Asia, the Megiddo expedition is the largest and most complete scheme yet started. The intention is to remove the whole mound, one stratum at a time, and completely record and publish the results. Eight years have not sufficed to produce a volume ; it reminds one of a mediaeval knight so completely armed that he cannot mount his horse. The perfect elaboration of method is marvellous, and the publication will set a standard which will be the despair of light-armed enterprises. The great stables of Solomon and the immense shaft and tunnel for the ancient water supply are the most spectacular results.

In Asia Minor the Anatolian-Hittite expedition has been active. The survey in detail is begun, and the great city of king Anita, the first Hittite king yet known, is being excavated 30 feet deep at Alishar, 130 miles east of Ankara. Three stages are recognised, pre-Hittite, Hittite and Phrygian. Another great city, Chatal Huyuk, near the Orontes, is also being explored.

Persia is an immense field of early civilisations, which may well prove to be the earliest region of all. Persepolis is the main centre now, and great results are reached of the age of the well-known kings. But near it a neolithic town with well preserved houses has been opened, having painted pottery preceding the earliest of Susa, following which come the periods of Al Ubaid, Uruk and Jenidet Nasr. So a series of cultures is now seen, long before what was supposed

to be the beginning. A series of sites linking this earliest age with that of Persepolis is now being prospected for future work. At Persepolis the large lay-out of the harem buildings at the side of the palace proved to be in such preservation that it has been roofed in and is the headquarters of the American work. Beneath the palace is found a large system of drainage passages for the rainfall. The grand sculptures of Cyrus have already been widely published in England.

In Iraq two sites have been chosen, east of Baghdad : Tell Asmar, the ancient Eshnunna, which is the headquarters, and Khafaje. At Tell Asmar the record of kings during three centuries before Khammurabi have been recovered. At the bottom, 20 feet down, is the earliest complete lay-out of a palace. In the level of the last king of Sargon's dynasty was found an Indian cylinder seal with figures of elephants, about 2500 B.C. Khafaje was a site worn away by denudation, exposing on the surface a town of 3000 B.C., a great square temple enclosure and buildings around it, surrounded by a ring of earthwork. Three priestly statuettes of copper were found here.

In Assyria, Khorsabad is far from exhausted, inscriptions lie close to the surface. Near Kirkuk a little mound yielded over a thousand tablets, the archives of six generations of a family, belonging to a civilisation as yet unknown. Further work was done at Khorsabad, and a complete stone bridge of Sennacherib has been discovered.

The multitude of tablets found demand an advance in the language. A general dictionary of Assyrian has been in progress since 1921, embodying on cards every occurrence of each word, a concordance of all Assyrian documents. This is carried out in transliteration, not needing the original writing like the Egyptian dictionary. It serves also as a base of study on separate subjects, under the chief words. For the history of persons, or identification of places, the collection is indispensable. Other linguistic enterprises are dictionaries of Old Persian, Aramaic and Phoenician. The complexity of Sumerian is being examined in view of compiling a dictionary. It is hoped to master the Assyrian material on $2\frac{1}{2}$ million cards, in the next five years.

A vision which is gradually growing is the complete corpus of all archaeological information, with figures of every object. Here the difficulty will be the overwhelming bulk, which must be concentrated in order to be available practically. A corpus of type forms is the only possible scope, and that already runs to hundreds of forms of pottery in each period of each country.

A great amount of publication of texts, Egyptian, Assyrian, Hittite, Syrian, etc., is already getting under weigh. Altogether we see here one of the greatest enterprises for studying the past of man that has ever been organised. The opening up of the civilisations of the East has become as important a subject for teaching as the opening up of physical science on a large scale in the last two generations, and it demands equal attention and provision for study. F. P.

Tell Halaf. By Baron MAX VON OPPENHEIM. Translated by Charles Wheeler. 8vo, 336 pp., 68 pls. 1933. (Putnam's.) 21s.

This site is near Ras el Ain on the Baghdad railway, 200 miles east of Issus. The Tell is considered to have been the capital city of Subartu, occupied from 3100 to 2600 B.C. by a people who built with wall sculptures of the same class as those of Sinjerli and Sakje-Geuzi, but less finished. After that age there was, about 1150 B.C., much building by an Aramaic king Kapara, using the old material.

The sculpture is crude and cubist in nature, especially on the statues. In the lowest levels there is much painted pottery, of eastern rather than western connection: none of the kinds imported at Gaza are figured. There were chariot models of pottery, with spokes painted on the wheels.

The best of the statues are of a seated goddess holding a bowl. This seems to be the prototype of similar figures which are numerous in Southern Russia. The winged sphinx figures are like those from Sinjerli, in the palace of Bar-rekub, 730 B.C. This suggests that the sphinx portal guards at Halaf were a much later addition to the original building, the statues in which are far cruder and less detailed. The mingling together in one stage (p. 258) of such figures of decadent detail with the bold work of the colossal bird, brings some doubt of the classification by style.

A few graves were found, which contained distinctive ornaments. The sacred tree between animals recurs in gold work, and a weird mouth-covering of gold with stripes of blue and white enamel for the hair on the lips. If this be enamel, and not inlay, it would be a very early example. Earrings are of the triple boss type, as on the royal attendants at Khorsabad. For a popular book this is well illustrated and detailed; it is, however, "the forerunner of a definitive scientific work."

F. P.

The Tomb of Nefer-hotep at Thebes. By NORMAN DE GARIS DAVIES, with plates in colour by NINA DE GARIS DAVIES. In two volumes, pp. 81, pls. lxi+vii. 1933. (New York.) Price \$25.

When a publication is issued in the joint names of Mr. and Mrs. de Garis Davies it is a guarantee of accuracy in the reproduction of the sculptures and sympathy in the explanation of the scenes. The tomb of Nefer-hotep is one of the most interesting of the series that the Metropolitan Museum of New York is now publishing. The interest lies not merely in the scenes of daily life, but in the art itself. Mr. Davies claims that there is seen here the last flicker of the art of El Amarna, though in the main the artists had returned to the old methods and conventions. It is only to be expected that some of the art would survive to this date if Mr. Davies is right in his reading of the King's cartouche as the "Divine Father, Ay," the immediate successor of Tut-anhk-Amen. Hay, who copied the tomb more than a century ago, read the cartouche as that of Amenhotep I, but he was doubtless influenced by finding the name of that king in the scene of the worship of him as ruler of the necropolis.

It was an inspiration on the part of Mr. Davies to reproduce the copies, made by Hay and Wilkinson, of the scenes in the tomb. The scene of the king and queen in the balcony with courtiers below is an example of how even a careful copyist like Hay could be misled by not realising that a later artist had altered the original drawing. Much of the sculpture had been overlaid with plaster in Ramesside times, and the lower parts of the two royal figures had been drawn in over the plaster by an ignorant draughtsman without regard to anatomy or proportion. Hay copied what he saw and therefore preserved the upper parts of the figures which are now almost entirely destroyed; Mr. Davies has removed the plaster and has revealed the whole of the original picture. In the case of the weaving scene it is only necessary to compare Wilkinson's drawing (pl. lx. C) with what remains at the present day (pl. xlvi) to see how much the careful copyists of the last century have preserved.

Mr. Davies's discussion of the *shaduf* is interesting, but unfortunately leads nowhere. The machine was certainly in use in the New Kingdom, as pictorial

representation proves. That no name for it has been recognised in the language is not in itself evidence of its foreign origin; rather the reverse, for foreign objects usually bring a name with them. I suggest, as the root *šd* has the meaning of to bring away, to take out, especially with the idea of "in a container," and as the derivative *šdw* is a waterskin, that the word *Shaduf* (*šdwf*) is ancient and is either a form with suffixed masculine pronoun, as in Coptic, or the *w* has changed to *f* in pronunciation. Mr. Davies is undoubtedly correct in suggesting that the *shaduf* was rarely used, probably only in the private gardens of the wealthy; this would be the reason why the name does not occur and that the language was not enriched with similes and references to its use.

The book is full of interesting and suggestive material for the student, and Mr. Davies's explanatory commentary is extraordinarily helpful. There are, however, one or two faults. In his desire for dramatic description Mr. Davies has allowed himself to be led into some inaccuracies; there is, for instance, nothing to show that the overseer's servants "armed with clubs and a noose, lasso the unfortunate herdsmen as if they were so many cattle and drag them up for discipline." There is nothing in the scene to warrant the idea of lassoing, and even the dragging with ropes is doubtful. The figure of the supposedly lassoed man does not appear to be part of the original scene, as it is squeezed into a place where it does not belong, and overlaps the figure in front and the figure behind.

The translations of the inscriptions are purposely free in order to give the dramatic effect. This is a good innovation, for it gives the human touch so often wanting in translations from the Egyptian. There are a few mistakes, e.g., on pl. lii Meryt-Re is called "his beloved sister," but the translation gives "his beloved wife." Mr. Davies has also not realised that the marriage laws of ancient Egypt did not conform to our present standard, and that when Ahmose Nefret-iry is called "King's mother and King's wife," the words are to be taken literally as indicating her relationship to the King with whom she is represented. But Mr. Davies's chief fault is a use of pedantic expressions, such as "libated" and "depicted."

All these, however, are but small faults, the shadows which enhance the brilliance of the whole achievement.

M. A. MURRAY.

JOURNALS

PUBLICATIONS DE LA SOCIÉTÉ ÉGYPTOLOGIQUE À L'UNIVERSITÉ DE LENINGRAD, 6.
1930.

The first four pages and page 9 of this publication of 44 pages and two plates are in Russian, the rest in German.

PIOTROVSKIJ, BORIS.—*Zur Revision der Verteilung des Wortschatzes im ägyptischen Wörterbuch.*—The writer demands a revision of the distribution of the words in the Egyptian dictionary according to semantic complexes.

FLITTNER, N.—*Ein Alabastergefäß aus Haremhebs Zeit.*—This is a description of an alabaster vase in the Hermitage with the name of Horemheb on it. It was bought in Egypt about five years ago.

STRUVE, W.—*Die Scheiberpalette* [sic] No. 2372 der Ermitage-Sammlung.—In describing this palette in his *Inventaire de la collection égyptienne*, 1891, Golenischeff remarked that the back of the palette contains a very indistinct hieratic inscription. The present writer gives a transcription of this inscription, which concerns deliveries of grain.

JERNSTEDT, P.—*Die koptischen Papyri des Asiatischen Museums.*—The small collection of Coptic papyri which are edited in this article was acquired by the Asiatic Museum in 1926 from B. Turajev's collection. L. B. E.

Vorläufiger Bericht über die Deutsche Hermopolis-Expedition, 1929–1930. By Dr. GÜNTHER ROEDER. 4to, 57 pp., 19 pls. Reprinted from *Mitteilungen des Deutschen Instituts für ägyptische Altertumskunde in Kairo*, Vol. II, Part 2 (Augsburg, 1931).

This is a preliminary report on the first German excavation in Egypt since the war. The object of the expedition was to dig the site of a town that had arisen gradually. As no German field-Egyptologist was to be had, Dr. Roeder obtained the necessary assistance from two fellow-countrymen, of whom one had worked with the Koldewey School in Mesopotamia, the other on prehistoric settlements in Germany. In his summary of results, Dr. Roeder expresses satisfaction with the method used. No objects of outstanding importance were found, such as had previously come from the site. It was ascertained, *inter alia*, that the Bronze Age inhabitants were still using flint implements; that pottery imported from Greece was copied locally in a coarser technique, and that the town could rival important Roman cities in its architecture, thanks to the work of Greek sculptors. Further work cannot be expected to yield complete foundations of individual buildings nor their full equipment, as at sites that were only inhabited for a short period or have been buried by sand. But the lay-out of the Greco-Roman town may be elucidated with the help of a very full literary tradition, the streets and open spaces of earlier periods may be identified, and in certain favourable parts the residential quarters of the N.K. and M.K. may be reached. L. B. E.

ZEITSCHRIFT FÜR AEGYPTISCHE SPRACHE, LXVIII. PART I. 1932.

SCHÄFER, HEINRICH.—*Die Ausdeutung der Spiegelplatte als Sonnenscheibe.*—In two hand-mirrors of the Middle Kingdom from Nubia, the handle in each case is formed of two lions; these objects take the picture of the sun rising between two lions back to M.K. date. The mirror itself cannot have been regarded as the sun before the Pyramid Age, when round mirrors first came in.

GLANVILLE, S. R. K.—*Records of a Royal Dockyard of the Time of Tuthmosis III: Papyrus British Museum 10056.*—This is the second part of an article, of which the first appeared in *Zeitschrift*, LXVI, 2, 1931 (A.E., 1932, 4, p. 122). Apart from a number of isolated historical and linguistic points, the main interest of the papyrus consists in its contribution to our knowledge of ancient Egyptian shipbuilding. The majority of the ships for which timber is used in this papyrus are called *imw*, and whatever the meaning of the word may be here, a definite type of vessel or simply "a ship," it is certain that the boats referred to had been known in Egypt for centuries and were of the type commonly represented on the monuments. A passage on shipbuilding from Pap. Anastasi IV is included, also a photograph and translation of the text of Stela B.M. 1332, which was made for one, Inena, "Chief craftsman of the shipwrights of the boats of all the gods of Upper and Lower Egypt."

CLÈRE, J. J.—*Un fragment de stèle du début du Nouvel Empire* (Berlin 22485).—The headdress of one of the women is peculiar, consisting of a flat oval pad and a uraeus, of which the tail hangs down behind. There is a similar uraeus above the woman's head in the word sign for *mes* in the lady's name, and also in another name on the stela.

WILSON, JOHN A.—*Ancient text corrections at Medinet Habu.*—There were many errors to correct in the inscriptions on the walls of the XXth dynasty temple of Medinet Habu, and the correction was not thorough and consistent. It is not at all certain that the temple when finished contained all the errors that are now to be seen, for where the plaster has fallen away the original mistake may be revealed, and not the correction.

WILSON, JOHN A.—*The Descendants of hwy-r-hr.*—This word meaning "face-to-face encounter, first onslaught, sudden attack" is traced through various forms to a feminine noun in Achmimic *χωωχε*, *χωχε*, *χωχε*, meaning "fear"; a genealogy is suggested.

BISSING, FR. W. v.—*Opfertafel aus dem Grabe des Chawey-heb im Museum Scheurleer.*—A new reading is suggested for the name of the person for whom this offering tablet was made.

SCHMIDT, CARL.—*Das Kloster des Apa Mena.*—A Berlin papyrus (P. 11937) is an agreement between the new head of the monastery of Apa Mena and the brethren. The writer of the article dates it to the 8th-9th century. It shows the depths to which the priesthood had sunk, as the new superior could not write and had to sign by three crosses; moreover he had bought the dignity for 53 *όλικόττινοι*. This monastery is mentioned on an ostracon (*Zeitschrift* LXVII, p. 102 f.; A.E., 1933, p. 62); its locality is discussed.

MISCELLANEA.

SCHÄFER, HEINRICH.—*Skarabaeus und Mondscheibe.*—Scarab beetles holding moon-discs are known from Tutankhamen's ornaments; the discs are definitely moons, as the circle is embraced by the crescent; and they are made of gold and silver, whilst the suns are of gold and copper. But silver mirrors (see the writer's article above on mirrors) cannot refer to the moon as the crescent is absent.

BISSING, FR. W. v.—*Grundsteinbeigaben Sesostris' I aus dem Tempel von Dendere?*—It is suggested that an inscribed tile in the writer's collection and a bronze *situla* in the Berlin Museum bearing the name of Amenemhat I are both foundation deposits.

CAPART, JEAN.—*Ein vorgeschichtlicher Elfenbeinstab?*—An ivory published by Borchardt in *Zeitschrift*, LXVI (A.E., 1932, p. 119) and also dealt with by Scharff in the same journal (A.E., 1932, p. 122) is not considered genuine by Capart.

PIEPER, M.—*Das Schatzhaus des Rhampsinit bei Shakespeare?*—It is suggested that a passage in *Twelfth Night* (Act V, sc. 1, 11, 120–22) mentioning “the Egyptian thief” is an allusion to Herodotus’ story of the Treasury of Rhampsinitus.

WOLF, WALTHER.—*Zu Pap. Harris* 500, v. VI, 2.—Sense can be made of this passage in the Story of the Doomed Prince (which contains the hero’s remark on the attempt of the Syrian princes to climb to the window of the princess of Naharina) by translating *sny* as “hurt” and reading, “O, if only my feet did not hurt, I would go climbing with you.” L. B. E.

ZEITSCHRIFT FÜR AEGYPTISCHE SPRACHE. LXVIII. PART 2. 1932.

BORCHARDT, LUDWIG.—*Ein Brot.*—The writer has succeeded in baking a loaf shaped like a specimen in the Egyptian Department of the Berlin State Museum (Inv. No. 22847), which is deeply hollowed out in the centre. This kind of loaf was often depicted, sometimes with more than one cavity. Borchardt concludes that these holes served as bowls for the food that was eaten with the bread.

GRÜSS, JOHANNES.—*Untersuchung von Brot aus der Ägyptischen Sammlung der Staatlichen Museen zu Berlin*—The Egyptian loaf mentioned in the preceding article and four others in the same Collection were examined by the writer of this article for material and process of baking. All were made of emmer-wheat.

SCHÄFER, HEINRICH.—*Das Simonsche Holzköpfchen der Königin Teje.*—Some recent observations of the portrait head of Queen Tyi in wood (Berlin Museum 21834) are given in detail, though the reason for covering the costly inner head-dress with a linen wig and glass beads remains unsolved. The Röntgen rays revealed the presence of the right earring under the wig.

HERMANN, ALFRED.—*Das Motiv der Ente mit zurückgewendetem Kopfe im ägyptischen Kunstgewerbe.*—A description is given of a gold chain in the Berlin Museum (No. 20786) composed of twenty identical pieces in the shape of a duck with its head turned over its back. The writer then reviews the various uses and modifications of this motive by the Egyptians in applied art of the N.K.

JOHANSEN, P.—*Porträts in der ägyptischen Kunst?*—In the writer’s opinion there can be no doubt that the Egyptian sculptor strove after portraiture, though he had to rely on a quick eye and a retentive memory, particularly in royal likenesses. The differences in various statues of the same person are explained by the circumstances in which the artist worked.

CORTEN, R.—*Ein Relief aus der Zeit zwischen Altem und Mittlerem Reich.*—On this relief, which is in the Hamburg Museum of Ethnology, the owner is apparently depicted twice, once seated and once standing before the offering table. The staff held by the standing figure is remarkable.

v. BISSING, FR. W.—*Eine Affengruppe des Mantinehe aus Theben.*—A description of the XXVth dynasty group of three monkeys in the Scheurleer Museum at The Hague.

HILZHEIMER, MAX.—*Zur geographischer Lokalisierung von Punt*.—It is generally accepted that Punt was situated on the African coast of the Red Sea. A zoological clue to a nearer localization is afforded by the evidence that Hatshepsut's expedition to Punt brought back Hamadryad or Arabian baboons and giraffes. This baboon is not found farther south or farther east than Deir Dauah (in Abyssinia), whilst a species of giraffe (*Giraffa reticulata de Winton*) is known not far east of this place in the neighbourhood of Djig-Djiga, both not more than two days' journey from the coast, on which are situated the two most important ports, Dschibuti and Berbera.

PROSKAUER, FELIX.—*Zur Pathologie der Amarnazeit*.—The writer diagnoses rickets in Akhenaton's family and attributes their characteristic dolichocephaly to this disease.

KEIMER, L.—*Die "Papyrus-farbene" Heuschrecke*.—A description of green amulets in the form of a grasshopper, which the writer dates to the first half of the XVIIIth dynasty.

TILL, WALTER.—*Der Murmelvokal*.—The writer disagrees with the view that the horizontal stroke over a consonant or consonants in Coptic means that the consonant or consonants thus marked formed a syllable without a vowel.

MISCELLANY.

There is only one article under this heading, namely, a reply by O. NEUGEBAUR, entitled *Nochmals die Scheffelteile*, to Vogel's criticisms in *Zeitschrift LXVI* of the writer's article on the same subject—the *hekāt* and its divisions—in *Zeitschrift LXV*. L. B. E.

ARCHIV. FÜR ORIENTFORSCHUNG. VIII, 6.

BIRGER PERING.—*The flying disc in Assyria*.—This symbol is first met as a flying boat of the sun in the first dynasty, and on the winged disc with Khufu, though in this paper it is only quoted as from the Middle Kingdom. On cylinders it may be as early, and it is frequent in Hittite scenes. In Assyria it was surcharged with a figure of the god shooting, and it was often represented in Persia. This paper discusses it fully.

BOSSELT, H. T.—*The Hittite Pantheon*.—This is a discussion of the gods figured as on a panther, Khepatu and the rain-god Dadamimash. The various examples of the names in Hittite signs are discussed.

The American reports of exploration in Anatolia are reviewed, with figures of the pottery, which has affinities with Cypriote but not with Syrian forms. The Beth-shan results of Byzantine and Arab date are noticed. In the news is announced the list of kings from Khorsabad, which is complete for three thousand years and should clear up Babylonian as well as Assyrian history. Other recent discoveries have already been noticed here.

At the end is a charming biography of Sayce, with an excellent portrait. Dr. Langdon well recounts his active enterprise in new fields, where he was the greatest path-finder. It was more form than sound which attracted him, and he had an immense memory for material shapes. His zeal for discovery was boundless, but a subject already worked lost its interest. To his friends of half a century he will always be affectionately remembered as one of the central figures in life. F.P.

QUARTERLY OF DEPT. OF ANTIQUITIES, PALESTINE. III, 2. (Milford.) 5s.

AVI-YONAH, M.—*Mosaic Pavements*.—This concludes the list of 362 sites. A general summary is added, classing the nature of the sites, material, patterns, etc. The few dates are all between 516 and 601 A.D., probably due to a fashion of dating at that period, rather than to absence of earlier work. Sixteen photographs show selected portions.

HAMILTON, R. W.—*Tell Abu Hawam*.—This is close to Haifa, and of the Late Bronze to Roman period. Cypriote and Mykenaean sherds are the earliest. A plan with five successive periods of building, coloured, shows scarcely a trace of continuity in the lines of walling. The pottery figured is from about 1450 to 650 B.C.

ILIFFE, J. H.—*A tomb at El Bassa*, A.D. 396.—This is near Ras Na-Qura, the northern frontier. The coins give approximate dates, and fix the period of 15 types of lamps. The gold earrings have a triangle of globules and a dangle of chain. The gold *solidus* of Valens has an unusually good portrait, to the credit of the Antioch mint.

AVI-YONAH, M.—*Byzantine church at Suhmata*.—The Mosaic pavement is dated A.D. 555, and is fully discussed with many photographs.

ILIFFE, J. H.—*Terracotta statuette of Aphrodite*.—This is about 300 B.C., found in the well-known prehistoric cave in Mt. Carmel. It is signed on the back by Paionias. The goddess stands with the right arm raised high, a collar of painted pendants at the neck, a climbing serpent clasp on the thigh, and a plain anklet. It suggests that the cave may have had a Hellenistic shrine of Aphrodite.

F.P.

MORGENLAND, 23, 1932.

WRESZINSKI, WALTER.—*Löwenjagd im alten Aegypten*.—Until the N.K. lions had been a terror: they are shown seizing their prey at will and, if hunted at all, pursued on foot with arrows and trapped. With the beginning of the N.K. a new series of representations made its appearance, namely, battle scenes and hunting scenes with the lord in his chariot, inspired by the campaigns of the Pharaohs in Syria and by the foundation of a colonial empire in Nearer Asia. The motive of the lord in his chariot was common property among the peoples of the E. Mediterranean shores from the middle of the 2nd millennium. Lion-hunting now became a royal sport. In Tutankhamen's hunts the tradition of the invincibility and immunity of the king prevented a realistic rendering, but with Rameses III the element of danger is introduced, in that the Pharaoh has to defend himself from attack from the rear. Mesopotamian influence is observable in pictures of the king on foot in single combat with a lion, but there is no Mesopotamian prototype for the chariot-hunt motive, and it is possible that this motive was introduced from Egypt into Nearer Asia.

L. B. E.

PALESTINE EXPLORATION FUND. Quarterly. October, 1932.

CROWFOOT, G. M.—*Pots, ancient and modern*.—This is an interesting comparison of old and new forms and methods. The mixture of calcite or limestone with the clay is still in use. Burnishing is now done with a shell; the ancient method is unknown. Such studies are enlightening.

CHITTY, D. J.—*Monastery of St. Euthymius*.—This is in the desert south of the road from Jerusalem to Jericho. It has been thoroughly examined and planned. There were several periods of construction, in which earlier material and sculpture was broken up and relaid. The history is traced in records from

425 till Salah-ed-din. Mosaics are found of a rather crude style, but are not here illustrated.

NAISH, J.P.—*Tell en Nasbeh*.—This site, seven miles north of Jerusalem, was excavated in 1926-9 by Dr. Badé. The outer wall is of Middle Bronze Age, i.e., Hyksos time. This was damaged, and Israelite walls built upon it. A temple of Ashtoreth belonged to the early monarchy 900-700 B.C., and the site continued in use till Roman times.

NARKISS, M.—*Dioscuri cult in Sebastiya*.—This is implied by a sculpture of a cap surmounted by a star. The Dioscuri also are figured together on Roman coins of Aelia (Jerusalem) and Askalon.

MYRES, J. L.—*Gog and the danger from the north in Ezekiel*.—A study of the political changes in the time of Ezekiel brings out the danger of the Scythian and Kimmerian raids. The peoples of Asia Minor are named, and it is proposed that Gog is Gyges of Lydia; it is suggested that the "battle of the eclipse" was due to the Greeks expecting the eclipse by the prediction of Thales, while the Medes were in consternation and thus easily conquered.

CLOSE, C. F.—*Map of excavated sites in Palestine*.—This is on a large scale, inch to 10 miles, and has the references to excavators recorded at the sites, forming a useful key to researches.

Archaeology of Palestine and the Bible, by Prof. Albright, is reviewed at length by Prof. Garstang. This competent work, which is based on the facts of the land, is outspoken in dealing with the imaginations of critics. The varied researches are outlined, and a full account given of Prof. Albright's excavation at Tell Beit Mirsim, Kiriath Sepher.

F.P.

ASSOC. INTERNAT. STUDI MEDITERRANEI. III. 3.

This number gives an account of the "cave of the Sibyl" at Cumae. It is a long tunnel with converging sides and a narrow flat roof, having side openings at intervals to cisterns. The varying levels of this volcanic coast may well have flooded chambers which were dry originally, and the appearance of it is strikingly like the long gallery opening on the stone chambers at Tiryns. Is it not the substructure of a great Mykenaean fort on the hill above?

F.P.

Metropolitan Museum. Egyptian Expedition, 1931-2. New York. 1933.

Mr. Lansing gives account of the work at Lisht. The pyramid pavement was searched for the chance of royal burials. The quarry marks are of years 11 to 13 of Senusert I. Foundation deposits were found under the corners of the pyramid, and many globular water pots in another deposit hole. In one place there was a hollow filled with sand over 20 feet deep. A tomb-shaft lined with brick had been sunk through the loose sand by means of a limestone block frame which was lowered by taking the sand out below while bricks were added below the lining to continue it downward. In a rubbish pit used by the priests of the pyramid there were sealings as late as Sebek-hetep III, showing the continuance of the funerary service. In a low cliff south of the north pyramid small tombs were found of the Old Kingdom.

Copying of selected scenes at Beni Hasan was done by Mr. and Mrs. Davies.

F.P.

BULLETIN OF THE METROPOLITAN MUSEUM OF ART, NEW YORK, 1933.

This number contains the preliminary report of the excavations round the pyramid of Se'n-Wosret (Senusert) I at Lisht during the season 1932-33.

Excavations on this site have been carried out intermittently by the Metropolitan Museum for more than a quarter of a century, and it is good to know that the site is still yielding important results. The remains of the pyramid chapel were found together with some of the sculpture with which it had been decorated. The figure of the Nile-god in relief is interesting as an attempt at representing a profile view of the body; the same distortion is seen as in some of the figures of Bedaween at Beni Hasan. The mastaba of Se'n-Wosret-Ankh proved a valuable discovery, as the burial chamber was very fully decorated in colour. During the excavation of this mastaba and the burial pits within its enclosure several statuettes were found, of which two female figures are the most remarkable. We look forward to the complete publication of this important excavation.

M. A. MURRAY.

PALESTINE EXPLORATION FUND. Quarterly. July, 1933.

CROWFOOT, J. W.—*Samaria, Report.*—Small fragments of an Assyrian stele, between 720–650 B.C., are the first such in Palestine. On sinking to the rock sherds of Early Bronze (or Copper) Age were found. Two or three floors of Israelite age have been identified, and four or five levels above the Persian period. The line of the Roman wall leaves the reported tomb of John the Baptist outside the city. The Theatre has been planned. Several tunnels for water supply were traced, one of which implies a great aqueduct across a valley more than 160 feet deep.

PHYTHIAN-ADAMS, W. J.—*Israel in the Arabah.*—Ezion-Gaber is proposed to have been at El Meniyyeh, some way north of Elath, to which the port was transferred by Uzziah. Considerable remains of copper mining and smelting are near El Meniyyeh. The Kenites are claimed as smiths or miners, with Petra as their stronghold.

SUKENIK, E. L.—*Inscribed Hebrew and Aramaic Potsherds.*—These are from Samaria. No. 1, "Belonging to Pekha." No. 2, about shepherds and measures of barley. Two others refer to a year and the produce in the jars.

F.P.

Die Bedeutung der altsumerischen Metalltypen für die Chronologie der europäischen Bronzezeit. By Prof. V. G. CHILDE. 6 pp. 1933. (Reprinted from *Mitteilungen der Anthropologischen Gesellschaft in Wien*, vol. LXIII.)

In recent years finds of Sumerian tools, weapons, and jewellery of the plano-convex or pre-Sargonic period have been published which are certainly earlier in date than B.C. 2500. These are compared with contemporary forms from the Indus and from Egypt. The comparison shows how widely the simplest forms of implements had diverged before the middle of the third millennium in these three centres, and consequently how remote in the fourth millennium the origin of the metal industry must have been. Some of these Sumerian types have been found at Troy II and on the Danube (Aunjetitz period). Troy II may, therefore, be as early as the first half of the third millennium, whereas on the Danube the Sumerian types are found with a pin with an eyelet in the shank which, though also eastern in origin, is probably of later date, as similar objects were found in a Hittite grave by Woolley (see *Liverpool Annals of Archaeology and Anthropology*, VI, pl. XXIC).

L. B. E.

NOTES AND NEWS.

In future *ANCIENT EGYPT AND THE EAST* will be published half-yearly on June 1 and December 1 instead of in quarterly parts as hitherto. The annual subscription rate will remain the same.

The excavation of Tell Ajkul is proceeding apace and interesting results are promised for the next number of this Journal.

The outstanding item of recent archaeological news is the purchase by the nation of the Codex Sinaiticus, not only for the great interest of the manuscript, but also for the fact that it marks a revival of that world-wide interest in archaeology which was so marked when the tomb of Tut-ankh-amen was brought to light. After the War archaeology was forgotten until Howard Carter's great discovery; during the late financial depression it again fell into the background, but the acquisition of the Sinaitic Codex has re-awakened the general public to the value of the records of the Past. That a document of such importance should be costly is only to be expected: but the possession by the British nation of two out of the three earliest MSS. of the Bible—the Codex Alexandrinus and now the Codex Sinaiticus—makes the British Museum the richest library in the world for Biblical scholars. The cost of the Codex Sinaiticus is £100,000, of which half must be raised by private subscriptions. The British Museum has issued an Appeal for funds; such an object should surely commend itself to all readers of this Journal. Subscriptions can be sent to

THE DIRECTOR,
British Museum,
London, W.C. 1,

or to the Westminster Bank, Ltd., Bloomsbury Branch, 214, High Holborn, London, W.C. 1. Cheques may be made payable to the Trustees of the British Museum and crossed "Sinai Bible Manuscript Account."

It is to be hoped that ere long this new interest in archaeology will lead to the resumption of those archaeological explorations which have been suspended or curtailed for lack of the necessary funds. There are fresh fields to be explored in Baluchistan and India; their great importance for the further understanding of the cultures of other lands is evident from the recent work in the Indus Valley and the finds of Sir Aurel Stein in Northern and Southern Baluchistan.

It has been announced that the British School of Archaeology in 'Iraq has this season allotted the sum of £500 to Sir Aurel Stein for the furtherance of archaeological exploration in Southern Persia.

There is welcome news from 'Iraq. Fears were recently entertained that the generous facilities accorded to archaeological research by the present

Antiquities Law were about to be withdrawn by the Government; fortunately these have not materialised. Dr. and Mrs. C. L. Woolley have accordingly once more resumed the excavation of Ur, where a cemetery of Jemdet Nasr date is to be cleared.

The present unavoidable curtailment of facilities for archaeological study at the British Museum owing to necessary repairs and reconstruction is one of those trials that must be met with patience. The sympathy of all who are aware of their present difficulties will be extended to the staff of the Department of Assyrian and Egyptian Antiquities.

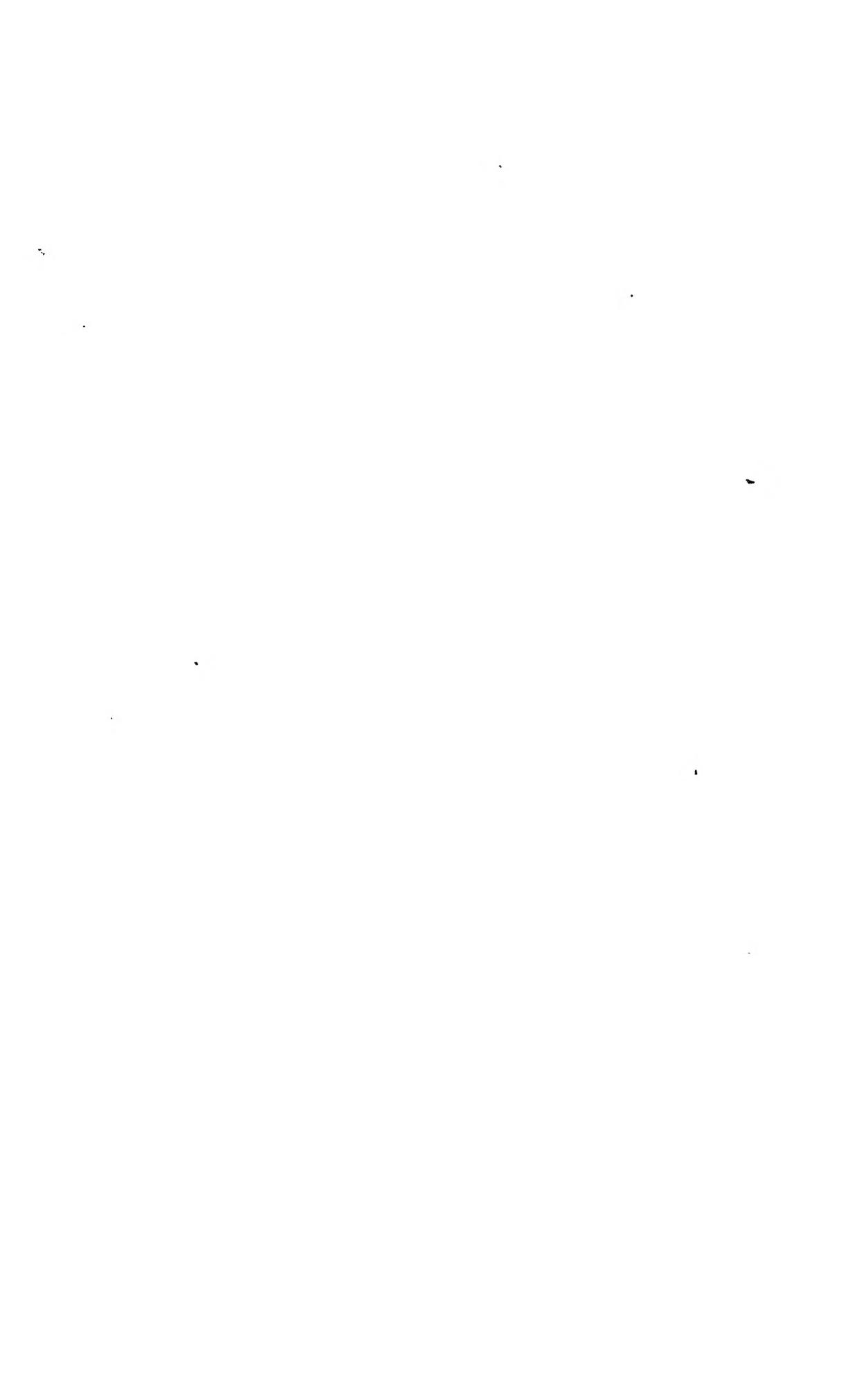
OBITUARY.

The death of MISS WINIFRED CROMPTON, Curator of the Egyptian department in the Manchester Museum, will be mourned by a wide circle of friends far beyond the immediate confines of her own department and of the Manchester Egyptian and Oriental Society, whose growth and development have been so closely bound up with her during the twenty-two years since its foundation. To her charming and friendly personality, as well as to her knowledge and enthusiasm, the advancement of Egyptological studies in the University of Manchester is largely due.

It is of interest to note that the Manchester Museum, in which Miss Crompton took so great a pride, was founded partly by the munificence of the late Mr. Jesse Haworth, who was also closely associated with the early work of Sir Flinders Petrie.

The premature death of MR. ARTHUR WEIGALL has brought to an early close a life of keen and enthusiastic activity in the field of archaeology. In his earlier days as *Inspecteur-général* in the Egyptian Antiquities' Service, he initiated the sound policy of protecting with iron doors those Theban tombs whose paintings have preserved for us the priceless scenes of daily life in ancient Egypt. His Topographical Catalogue of those tombs and his *Guide to the Antiquities of Upper Egypt* are most valuable pieces of work. Throughout his career he has produced pen-pictures of archaeological subjects which always rouse intense interest in the minds of the general public.





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